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# THE 1964 EASTERN EUROPE AGRICULTURAL SITUATION

## **Supplement No. 3 To The 1964 World Agricultural Situation**

**U. S. DEPARTMENT OF AGRICULTURE  
ECONOMIC RESEARCH SERVICE  
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## CONTENTS

	<u>Page</u>
Summary . . . . .	1
Soviet Union . . . . .	3
Production . . . . .	3
Soviet crop statistics . . . . .	9
Policy . . . . .	14
Food situation . . . . .	17
Foreign trade . . . . .	17
Poland . . . . .	22
Production . . . . .	22
Agricultural inputs . . . . .	24
Policy . . . . .	24
Food situation . . . . .	25
Foreign trade . . . . .	26
East Germany . . . . .	28
Production . . . . .	28
Agricultural inputs . . . . .	28
Policy . . . . .	30
Food situation . . . . .	31
Foreign trade . . . . .	31
Czechoslovakia . . . . .	34
Production . . . . .	34
Agricultural inputs . . . . .	34
Policy . . . . .	36
Food situation . . . . .	37
Foreign trade . . . . .	37
Hungary . . . . .	39
Production . . . . .	39
Agricultural inputs . . . . .	41
Policy . . . . .	41
Food situation . . . . .	43
Foreign trade . . . . .	43
Rumania . . . . .	43
Production . . . . .	43
Agricultural inputs . . . . .	45
Policy . . . . .	45
Food situation . . . . .	47
Foreign trade . . . . .	47
Bulgaria . . . . .	49
Production . . . . .	49
Policy . . . . .	49
Food Situation . . . . .	51
Foreign trade . . . . .	51
Yugoslavia . . . . .	53
Production . . . . .	53
Agricultural inputs . . . . .	53
Policy . . . . .	55
Food situation . . . . .	56
Foreign trade . . . . .	56
Appendix tables . . . . .	60

## LIST OF TABLES

<u>Table</u>		<u>Page</u>
1	Eastern Europe: Indices of net agricultural production, total and per capita, by country, prewar and 1960/61 to 1963/64 . . . . .	2
2	Soviet Union: Area and production of principal crops, output of animal products, and number of livestock, average 1955-59, annual 1960-63 . . . . .	4
3	Soviet Union: Sown area of selected crops, 1953 and 1958-63 . . . . .	6
4	Soviet Union: Estimated production and utilization of wheat and rye, 1963 . . . . .	8
5	Soviet Union: Wheat and rye balance 1954-63, official Soviet production data . . . . .	11
6	Soviet Union: Wheat and rye balance 1954-63, USDA estimates . . . . .	12
7	Soviet Union: State productive investment in agriculture, 1951-65 . . . . .	16
8	Soviet Union: Principal agricultural imports, annually, 1955-62 . . . . .	19
9	Soviet Union: Principal agricultural exports, annually, 1955-62 . . . . .	20
10	Poland: Area and production of principal crops, output of animal products, and number of livestock, average 1955-59, annual 1960-63 . . . . .	23
11	Poland: Principal agricultural imports, annually, 1955-62 . . . . .	27
12	Poland: Principal agricultural exports, annually, 1955-62 . . . . .	27
13	East Germany: Area and production of principal crops, output of animal products, and number of livestock, average 1955-59, annual 1960-63 . . . . .	29
14	East Germany: Principal agricultural imports, annually, 1955-62 . . . . .	32
15	Czechoslovakia: Area and production of principal crops, output of animal products, and number of livestock, average 1955-59, annual 1960-63 . . . . .	35
16	Czechoslovakia: Principal agricultural imports, annually, 1955-61 . . . . .	38
17	Czechoslovakia: Principal agricultural exports, annually, 1955-61 . . . . .	38
18	Hungary: Area and production of principal crops, output of animal products, and number of livestock, average 1955-59, annual 1960-63 . . . . .	40
19	Hungary: Principal agricultural imports, annually, 1955-62 . . . . .	42
20	Hungary: Principal agricultural exports, annually, 1955-62 . . . . .	42
21	Rumania: Area and production of principal crops, output of animal products, and number of livestock, average 1955-59, annual 1960-63 . . . . .	44
22	Rumania: Principal agricultural imports, annually, 1958-62 . . . . .	48
23	Rumania: Principal agricultural exports, annually, 1958-62 . . . . .	48
24	Bulgaria: Area and production of principal crops, output of animal products, and number of livestock, average 1955-59, annual 1960-63 . . . . .	50
25	Bulgaria: Principal agricultural imports, annually, 1955-62 . . . . .	52

Table

		<u>Page</u>
26	Bulgaria: Principal agricultural exports, annually, 1955-62 . . . . .	52
27	Yugoslavia: Area and production of principal crops, output of animal products, and number of livestock, average 1955-59, annual 1960-63 . . . . .	54
28	Yugoslavia: Principal agricultural imports, annually, 1955-62 . . . . .	57
29	Yugoslavia: Principal agricultural exports, annually, 1955-62 . . . . .	58
30	Eastern Europe: Agriculture in the economy and major agricultural inputs, by country, 1962 . . . . .	60
31	Eastern Europe: Socialization of agriculture, by country, 1962 . . . . .	61
32	Conversion equivalents . . . . .	62

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# 1964 Eastern Europe Agricultural Situation

## Summary



The most significant feature of the agricultural situation in Eastern Europe during 1963 was the very poor grain crop in the Soviet Union. This, coupled with mediocre crops in most of Eastern Europe, resulted in a decline in total agricultural output in the area. Only in Rumania and Yugoslavia were slight increases in net agricultural output achieved, but the increases were insufficient for attainment of annual production goals.

Eastern Europe will be a net grain importer during 1963/64--in substantial quantities--although Rumania will maintain its net export position. This is a direct result of the failure of the grain crop in the Soviet Union. The potential for exports of livestock products from Eastern Europe is considerably diminished. Tobacco exports from Bulgaria and Yugoslavia, however, are expected to increase.

Agricultural output in the Soviet Union during 1963 fell sharply below the level of 1962 and was even lower than in 1958, the base year of the current Seven-Year Plan (1959-1965). Poor weather was a major contributing factor to the dismal 1963 crop situation, to an even greater extent than in 1962. The impact of the unfavorable climatic factors was heightened by agricultural stagnation during the 4 preceding years and by the problems which perennially plague agriculture in the Communist countries--collectivization, rigid state controls, shortages of capital and equipment, faulty production practices, and inadequate incentives to producers.

Although almost all Soviet crops were affected by the unfavorable weather, grains--especially wheat--were the hardest hit. The grain crop probably was the smallest since the initiation of the New Lands program in 1954, and stocks were at an irreducible minimum. Instead of exporting 4.8 million to 6 million metric tons of wheat, as it did annually during 1959-62, the Soviet Union will have to import 10-15 million tons in 1963/64. Some of this, however, will be re-exported to the satellites.

Agricultural output in the other East European countries did not decline as much as in the USSR during 1963/64. Climatic conditions did not affect crops as adversely as in the USSR. On the other hand, the output of livestock products declined considerably in a number of these countries as a result of a decline in livestock numbers during previous years. There was a substantial increase in meat production in the Soviet Union occasioned by the continued "distress" slaughter of overextended herds.

Following 2 years of declining production in the Danubian countries, output is expected to improve slightly during 1963/64. An estimated increase of 3 percent took place in Rumanian production. Output in Yugoslavia increased slightly, while the level of Bulgarian output remained unchanged. In contrast, production in Hungary fell about 3 percent from the level of the preceding year.

A decline took place in agricultural output in Poland and Czechoslovakia largely because of reduced output of livestock products and oilseeds. The most significant aspect of the agricultural situation in East Germany during 1963 was the apparent stabilization of output following the precipitous decline that accompanied the completion of collectivization.

Table 1.--Eastern Europe: Indices of net agricultural production, total and per capita, by country, prewar and 1960/61 to 1963/64 1/

(1952/53-1954/55 = 100) <u>2/</u>								
Country	Total				Per capita			
	:1963/64:				:1963/64:			
	Prewar:	1961/62:	1962/63:	<u>3/</u>	Prewar:	1961/62:	1962/63:	<u>3/</u>
	:	:	:	:	:	:	:	:
USSR.....	102	138	139	134	104	122	121	116
Other Eastern Europe:								
Poland.....	129	139	132	126	108	123	115	107
East Germany.....	125	100	101	101	136	107	107	108
Czechoslovakia...	138	128	129	125	124	120	119	115
Hungary.....	112	123	124	120	118	117	118	114
Rumania.....	100	130	125	128	108	117	111	113
Bulgaria.....	96	136	136	136	106	125	124	123
Yugoslavia.....	112	136	132	133	127	124	119	119
Total.....	119	128	125	124	118	119	116	113
Total Eastern Europe.....	108	135	136	131	109	121	121	115

1/ Revised since publication of The 1964 World Agricultural Situation on the basis of more recent information.

2/ 1953/54-1955/56 = 100 for USSR.

3/ Preliminary.

## SOVIET UNION

### Production

Agricultural output in the Soviet Union during 1963 fell sharply below the level of 1962 and was lower than in 1958, the base year of the present Seven-Year Plan, according to USDA estimates (table 16). The 1963 figure would have been even lower if extensive slaughtering of livestock, due to inadequate feed supplies, had not resulted in large increases in meat production, and if a record cotton crop had not been harvested in Soviet Central Asia. Thus, 5 years after commencement of the Seven-Year Plan (1959-65)--which called for increases of 8 percent per year in total agricultural production--this goal has not been achieved. Furthermore, net agricultural production stands at a lower level than when the present plan was initiated. <sup>1/</sup> Agricultural output in per capita terms is considerably below that of a half decade ago because of the continuing growth in population.

A dry fall in 1962 and a severe winter--with successive freezes and thaws--followed by one of the worst droughts of the century were the immediate causes for 1963's shortfalls in production. It is also significant that the crop failure in 1963 came on the heels of 4 preceding mediocre crop years. The impact of these climatic factors was aggravated by the perennial institutional shortcomings of Soviet agriculture--rigid state controls, shortages of capital and equipment and their inefficient use, insufficient incentives, and faulty production practices. Dryland farming practices, irrigation and fertilization of grain, and the use of pesticides were neglected.

Although poor weather damaged most crops in the Soviet Union its impact differed greatly by crop and region. Grains--especially wheat--were the hardest hit. Estimated wheat production for 1963 was the lowest since the commencement of the New Lands program in 1954, roughly 12 million metric tons or 23 percent below the 1955-59 average (table 2). The output of rye, a fall sown crop, which was not as seriously affected as wheat, was down somewhat from the low 1962 crop despite an increase in area.

Barley, which has been increasing in area rapidly in the past few years, was also down slightly. Oat production was down more than 60 percent from the 1955-59 average primarily due to substantial cuts in area, resulting from the Government's policy of restructuring the crop pattern. The estimated output of corn for grain in 1963 was about the same as in 1962 when 2 million hectares of the original 9 million planted were not harvested as dry grain. A similar cut in 1963 is anticipated.

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1. USDA index numbers of Soviet net agricultural output for the crop years 1960/61, 1961/62, 1962/63, and 1963/64 (1958/59 = 100) are 97, 100, 100, and 97. The official Soviet index numbers of gross agricultural output for the calendar years 1960, 1961, and 1962 on a base of 1958 are 103, 105, and 106. The Soviet index has not shown a decline in gross production since 1951.

Table 2.--Soviet Union: Area and production of principal crops, output of animal products, and number of livestock, average 1955-59, annual 1960-63 1/

Item	1955-59 average :			1960 :			1961 :			1962 :			1963 2/		
	Area	Production	Area	Production	Area	Production	Area	Production	Area	Production	Area	Production	Area	Production	Area
Field crops:															
Wheat	64,234	52,015	60,393	46,274	63,000	52,262	67,400	54,440	66,000	40,000					
Rye	18,107	15,203	16,200	13,208	16,700	15,240	16,900	13,716	18,200	12,000					
Barley	10,040	9,600	11,000	11,430	11,700	13,300	16,200	15,674	18,500	14,800					
Oats	14,613	12,015	12,800	10,886	11,500	8,709	6,900	5,600	6,000	3,900					
Corn 3/	4,797	7,536	5,100	7,620	7,200	12,700	7,000	9,800	7,000	9,800					
Potatoes	9,426	77,247	9,144	75,932	8,878	75,841	8,700	61,870	8,500	67,500					
Sugar beets	2,226	40,309	3,040	57,728	3,120	50,911	3,170	47,400	3,326	46,600					
(factory) 4/	4,001	3,364	4,190	3,674	4,217	4,400	4,390	4,400	4,600	4,000					
Sunflower seed	2,131	1,458	2,190	1,454	2,330	1,540	2,390	1,458	2,430	1,760					
Cotton 4/	...	...	...	...	...	...	...	...	...	...					
Livestock:															
Products:															
Red meat 5/	---	5,205	---	5,995	---	6,040	---	6,685	---	7,200					
Poultry 6/	---	578	---	800	---	800	---	800	---	860					
Milk	46,180	294	52,400	353	53,200	362	53,200	366	54,600	52,000					
Wool	---	---	---	---	---	---	---	---	---	376					
Eggs 4/	---	---	27.4	---	27.4	---	29.3	---	30.1	---	28.3				
Number: 7/															
Cattle	62.9	---	74.2	---	75.8	---	82.1	---	86.9						
Hogs	39.9	---	53.4	---	58.7	---	66.7	---	69.9						
Sheep	112.1	---	136.1	---	133.0	---	137.5	---	139.6						
Horses	12.6	---	11.0	---	9.9	---	9.4	---	9.0						

1/ USDA estimates of production unless otherwise indicated; Soviet estimates of area and livestock numbers.

2/ USDA preliminary estimates.

3/ Corn for grain.

4/ Soviet production estimates.

5/ Beef, veal, pork, mutton, lamb and goat, carcass weight.

6/ Dressed weight.

7/ January 1.

On the basis of a statement of a Soviet official in Pravda, December 17, 1963, the total grain crop in the Soviet Union in 1963 can be calculated at about 93 million metric tons. 2/ This is a drop of 55 million metric tons from the official Soviet figure of 148 million tons of grain claimed for 1962. The U.S. Department of Agriculture considered the 1962 crop greatly overestimated. The figure of 93 million tons is, however, close to the estimates made by the U.S. Department of Agriculture for the 1963 grain crop.

In contrast to earlier years, the Soviet Government had not, as of February 1964, released an official estimate of grain production for 1963. In the past, the practice has been to release preliminary estimates of the production of grain and of a number of other important crops during January of the following year. This official silence suggests either a reluctance to reveal the magnitude of the 1963 crop failure or uncertainty within the Soviet Government regarding the ultimate figures to be published.

The impact of unfavorable weather on grains was heightened by some of the major changes in the pattern of the sown area in the USSR during the past decade (table 3). The major changes in sown area consist of: (1) The corn expansion program, which was initiated by Khrushchev in 1954, and which tapered off only in 1963; (2) the reduction of annual and perennial grasses and fallow land and the replacement of these crops by livestock feed crops, mostly corn, sugar beets, and pulses; (3) the sharp decline in oat acreage and the increase in barley; and (4) of particular importance, the great expansion of the wheat area. However, a sharp distinction must be drawn between winter wheat and spring wheat. The total area under winter wheat remained practically stationary, though there was a reduction in some important regions, as in the Ukraine. Conversely, the total area under spring wheat increased rapidly though the traditionally small acreage in European regions of the USSR was further drastically reduced--with the exception of the Volga area. This huge expansion was the result of the New Lands program to increase wheat production that could be easily procured (purchased) by the State. The New Lands area, in the dry regions east of the Volga and the Urals, was sparsely populated and as a consequence much of the wheat produced there could be sold to the State. But there is the very serious drawback of the low and sharply fluctuating yields in these regions, which are subject to frequent droughts and have short growing and harvesting seasons.

The New Lands program was very successful in 1956 and 1958 when bumper crops were harvested. Since then, however, weather conditions have been less propitious, and in 1963 the result was a crop failure of major proportions.

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2/ According to the statement, the total grain crop for the 5 years from 1959 through 1963 averaged 900 million poods, or 14.7 million metric tons, a year greater than the average of the preceding 5-year period. The Soviet official average figure for the period 1954-58 was 113.2 million metric tons for all grains, which in addition to the 5 major grains, includes minor grains, immature corn and pulses. Adding the 14.7 to 113.2 and multiplying by 5, the total for the 5-year period 1959-63 would be 639.5 million metric tons. The official Soviet figures reported for the 4 years 1959-62 total 546.5 million metric tons. Subtracting the 546.5 from 639.5 leaves a residual of 93 million tons for the 1963 crop.

"The new lands region of Kazakhstan this year gave the very lowest harvest of grain in all the ten years since the region was opened up . . . . Certain farms did not even harvest their seed. Large areas of sown area simply had to be written off." 3/

This loss in the New Lands was accentuated by heavy winterkill of wheat in the southern regions of the USSR and by summer drought which damaged spring grains throughout practically all the Soviet Union.

The impact of this crop failure had a disproportionate effect on the Soviet economy. Wheat production fell by about one-fourth from 1962, but since the Soviet Government procures more than half its wheat from the New Lands, government procurements were hit especially hard. It is from these procurements that grain is obtained for consumers in urban centers and grain-deficit rural areas, as well as for export, stockpiling, and industrial uses.

Other crops were also damaged by the drought, but much less than grains. The potato crop is estimated to have been about 13 percent lower than the 1955-59 average, though higher than in 1962, also a year of serious shortfall in the Soviet potato production (see table 2). Sugar beets for sugar production are estimated to be down somewhat from the 1962 crop despite an increase in area. Although the crop was about 6 million metric tons above the 1955-59 average, there has been a decline in sugar beet production since 1960 despite increases in area.

Table 3.--Soviet Union: Sown area of selected crops, 1953 and 1958-63 1/

Commodity	1953	1958	1959	1960	1961	1962	1963 <u>3/</u>
.....Million hectares.....							
Wheat:							
Winter.....	17.8	18.2	17.4	12.1	17.3	18.1)	67.0
Spring.....	30.5	48.4	45.6	48.3	45.7	49.3)	
:							
Rye.....	20.2	17.9	17.1	16.3	16.7	16.9	<u>3/</u>
Barley.....	9.6	8.6	8.3	11.0	11.7	16.2	<u>3/</u>
Oats.....	15.3	14.8	14.3	12.8	11.5	6.9	6.0
Corn.....	3.5	19.7	22.4	28.2	25.7	37.1	33.9
Of which corn for dry grain.....	3.5	4.4	3.5	5.1	7.2	7.0	9.1
Pulses.....	2.4	2.1	2.5	3.3	4.3	7.2	12.8
Annual and perennial grasses.....	24.7	37.0	41.7	43.9	38.7	27.3	24.7
Summer fallow.....	29.6	24.0	23.6	17.4	16.1	7.4	<u>3/</u>
:							

1/ Soviet official figures.

2/ Soviet data as of July 1963, which does not in all cases agree with later USDA estimates in table 2.

3/ Not available.

3/ A. Baraev, "Problemy tseliny," Partiyanaya zhizn' Kazakhstana, No. 9, 1963, p. 9.

The sunflower seed crop--the major oilseed crop--is reported to be down somewhat from 1962. The supply of oilseeds in 1963, however, was augmented considerably by the large amount of cottonseed from the 1963 cotton crop.

Cotton production was reportedly the bright spot in Soviet agriculture in 1963. According to official statements, more than 5 million metric tons of unginned cotton (equivalent to about 8 million bales of ginned cotton) had been delivered to the Government by the end of December 1963.<sup>4/</sup> If the report is correct, this is by far the largest cotton crop ever harvested in the Soviet Union and is a reflection of the fact that all Soviet cotton is irrigated. Cotton production has remained fairly stable at nearly 1.5 million metric tons of cotton lint (about 6.5-7 million bales) over the past few years; the reported sharp increase in 1963 was due primarily to the availability of irrigation water, though there was also a small increase in area.

The very poor harvest also resulted in a further reduction in the livestock feed supply. This has driven down milk yields and production but has increased meat production because of increased slaughter. Sharply increased state purchase prices for livestock (dating from mid-1962) also stimulated deliveries, which reportedly have outrun the capacity of some slaughterhouses. The uptrend in livestock numbers, which has been of major proportions in the past decade, came to an end in 1963. Although large increases in livestock numbers were reported between January 1962 and January 1963, it was reported by the Soviet Government on January 24, 1964, that during 1963 cattle numbers dropped 1.7 million head, sheep 6.1 million head and hogs by a staggering 29.3 million head, or more than 40 percent of the hogs reported at the beginning of 1963. The entire increase in pig numbers from 1957 was thus wiped out in one year.

The difficult livestock feed supply is expected to worsen this winter. Meat production (including poultry) was reported to be up 7 percent in 1963 compared with 1962, which increased 9 percent over the preceding year. The fact that meat production increased by 9 percent in 1962 with an increase in numbers and only 7 percent in 1963 with a drastic reduction in livestock numbers is an indication of the very precarious base on which livestock herds increased in recent years. It also suggests that the meat production per hog slaughtered in 1963 was very low.

It is apparent from this review of Soviet agricultural production in 1963 that the primary impact of current agricultural difficulties is on the most important food item in the Soviet diet--bread--and the most important Soviet agricultural export--wheat. This has led to the replacement of traditional exports of wheat by heavy imports and a tightening of the bread supply as well as the use of lower quality flour. This situation and its consequences--the expenditure of large amounts of gold and foreign exchange for imports of wheat, the apparent urgency with which the Soviet Union requires these imports, the tightening of the bread supply, the use of lower quality flour, and the cancellation of Soviet export commitments to non-Bloc countries--indicate that

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<sup>4/</sup> The USDA preliminary estimate is slightly below that claimed by the Soviet Government (table 2).

breadgrains (wheat and rye) are in very short supply. USDA estimates of wheat and rye production and requirements in the Soviet Union for 1963 are indicated in table 4.

Table 4---Soviet Union: Estimated production and utilization of wheat and rye, 1963 1/

Production	:	Utilization
	:	
	:	Million metric tons
Wheat.....	40.0	: Waste <u>2/</u> ..... 2.6
Rye.....	12.0	: Seed <u>3/</u> ..... 12.4
Total.....	52.0	: Industrial use <u>4/</u> ..... 3.1
		: Domestic food consumption <u>5/</u> 43.4
		: Net trade <u>6/</u> ..... 3.0
		: Total utilization..... 64.5
	:	Million metric tons

1/ USDA estimates. No official figures available.

2/ Waste assumed to be 5 percent.

3/ Seeding rate 1.5 centners per hectare for wheat, 1.4 centners per hectare for rye. (Spravochnaya kniga direktora kolkhoza, 1956, pages 483, 485, and 490).

4/ Based, among other references, on a statement by Khrushchev (Stroitel' stvo kommunizma v SSSR i razvitiye sel'skogo khozyaistva, vol. 1, p. 90) that industrial use of grains in 1954 and 1955 was 4 million tons. This is assumed to have increased to 5 million tons by 1962 of which wheat and rye were assumed to be 60 percent.

5/ Per capita consumption of 190 kilograms of wheat and rye (estimated mid-1964 population of 228.4 million) assumed on the basis of total annual production of flour (all grains) of 36 million metric tons (Narodnoe khozyaistvo SSSR v 1962 godu p. 203) and Khrushchev's estimated total 1955 grain consumption for food of 2.4 billion poods (39.3 million metric tons), op.cit.

6/ Projected exports for 1964 assuming only commitments to Bloc countries and not including imports.

The gap between estimated production and requirements amounts to 12.5 million metric tons. A restriction of bread consumption through the reported close observance of the long-standing 2.2 kilogram (4.4 pounds) limitation on bread purchases, less liberal bread servings in restaurants, and the raising of the milling rate and the use of lower quality flour and admixtures of other grains will reduce this gap to some extent. It is also possible that a desire to replenish the depleted stocks of wheat and rye could increase the demand for imported wheat.

It would have been possible to bridge this gap without imports if the Soviet Union possessed adequate stocks of these grains. That it entered the world market early in the fall of 1963 and purchased about 11 million tons, at considerable expense, indicates strongly that such stocks are at a low ebb.

The apparent absence of sufficient stocks to cover 1963's shortfalls in production brings into sharp focus one of the major difficulties in analyzing Soviet agricultural developments: the reliability and meaningfulness of Soviet crop statistics. Official Soviet production figures for wheat and rye would lead one to assume large stocks of these grains existed rather than shortages. This sharp contradiction between officially claimed high production levels and considerable concern over 1 year of admitted poor harvest necessitates consideration of: (1) the validity of published Soviet grain statistics; and (2) the utilization of foodgrains in the Soviet Union.

### Soviet crop statistics

It has often been noted in USDA publications--and by nongovernment specialists on Soviet agriculture 5/--that official Soviet agricultural statistics, especially for grain, appear to be inflated. A number of reasons for this have been mentioned before, especially in The 1963 Eastern Europe Agricultural Situation. Soviet officials cite hundreds of examples of falsification in crop reports. They repeatedly decry the large amounts of dirt, chaff, and waste recorded as part of the crop. Despite such evidence of distortion, bumper crops were officially claimed in recent years which do not square with historical experience and weather conditions. In the relatively poor weather year of 1962, for example, the largest grain crop in Soviet history was claimed--148.2 million metric tons of which more than 60 percent was wheat and rye. It is difficult to see how such a record crop could be harvested and be followed by a serious enough shortage the following year to drive the Soviet Government into the world market for over 11 million tons of wheat.

The greatest inflation appears to be in breadgrains. Inflated grain statistics are not new in the Soviet Union. Few agricultural statistics were reported until several years after the death of Stalin, and those published were often given in percentages of a base year of unknown value. Beginning in 1933 these statistics were not in terms of harvested or "barn" yields, as in most other countries, but were so-called "biological" yields--estimates based on field samplings prior to harvest. Between the time of field observations and the harvest, large losses can occur. Although some western economists had discovered that the official data were inflated, 6/ it was not until after Stalin's death in 1953 that the USSR acknowledged that the figures previously

5/ Johnson, D. Gale, "Agricultural Production" in Economic Trends in The Soviet Union, A. Bergson and S. Kuznets (ed.) Harvard University Press, Cambridge, Mass., 1963, p. 233. (Dr. Johnson estimates that "aggregate output data for the years since 1958 are 10 to 15 percent too high compared with the early fifties.")

6/ Jasny, Naum, The Socialized Agriculture of the USSR, Stanford University Press, Stanford, California, 1949. (See his extensive discussion of "biological" yields, pp. 728-746).

Volin, Lazar, A Survey of Soviet Russian Agriculture, Agricultural Monograph No. 5, U.S. Dept. Agr., Washington, D.C., 1951, p. vii, and The American Statistician, Vol. 7, No. 3, June-July 1953, pp. 11-12.

Prokopivicz, S. N. Russlands Volkswirtschaft Unter Den Sowjets, Europa Verlag, A.G., Zurich, 1944, Ch. II, and other work by the same author.

reported were not true barn yields. Subsequently, lower barn yield figures were published, which appeared to be in line with reality, especially for the years 1950-55.

After 1957, however, yields reported by the Soviet Government again began to rise, although no sound reason--such as increased use of fertilizer and pesticides--could be adduced to account for these increases. Although years such as 1956 and 1958 had excellent weather with consequent high yields, a year such as 1962 with very poor weather was claimed to have produced a larger crop than in 1958.

For many years USDA has produced independent, although necessarily rough estimates, of major grain yields, which deviate sharply from official Soviet figures. Such deviations for the Stalin period were generally justified by subsequent Soviet revisions. For more recent years these estimates are considered to be only rough approximations of production of usable grain, bringing them in accord with western statistical concepts.

One method of verifying the validity of crop estimates is through the use of crop or food balances. Such balances are based upon utilization data provided by a large number of countries in the world, including many East European countries. However, the Soviet Union provides only meager data on the utilization of agricultural commodities, especially foodgrains.

Of the crucial end uses of wheat and rye only one is known with certainty--exports and imports for calendar years. Only sketchy evidence is available of other uses. Seeding norms are often given but usually in the form of averages. No specific figures have been found for recent years to indicate the total amount of a crop used for seed. Nor has the amount of the crop that must be written off as waste been indicated. Only scattered indications of human consumption and industrial uses are available. Stocks of wheat and rye are considered state secrets, although Soviet officials have intimated that from 80 to 100 percent of a year's requirements would be considered adequate stocks.

One use of wheat and rye which has not been mentioned above is for livestock feed. Normally, this would be an expected use of the poorest quality wheat and of a considerable quantity of rye in any country, especially where livestock feed is in short supply. In the Soviet Union, however, no mention of such feeding in significant quantities can be found in the literature nor has it been encountered by observers. Most authorities assume that wheat and rye grains are not fed to livestock. Cases of feeding bread and flour to livestock by private individuals have been reported in the Soviet press, especially during recent years, as examples of antisocial or criminal behavior. It seems doubtful that such feeding accounts for a significant quantity of grain.

Despite numerous difficulties in estimating, combined wheat and rye balances have been compiled for the Soviet Union on the basis of all available information. They are, of course, rough approximations. One balance, based entirely on USDA estimates, was compiled for 1963 and was discussed on page 8 (table 4). For the period 1954-63, two balances were prepared (tables 5 and 6). One is based on the official wheat and rye production figures published

Table 5.--Soviet Union: Wheat and rye balance, 1954-63. Official Soviet production data.

	Production:	Wheat and rye 2/	58.9	63.7	81.5	72.6	92.3	86.0	80.6	83.2	87.5	--
<u>Million metric tons</u>												
Utilization:												
Waste 3/		2.9	3.2	4.1	3.7	4.6	4.3	4.0	4.1	4.4	3.0	
Seed 4/		11.8	12.9	12.5	11.8	11.3	11.8	12.5	12.4	12.4	12.4	
Industrial use 5/		2.4	2.5	2.6	2.7	2.8	2.9	2.9	3.0	3.0	3.1	
Total		17.1	19.5	18.8	19.0	18.3	18.6	19.5	19.8	19.8	18.5	
Domestic food consumption 6/		37.3	37.9	38.6	39.3	40.0	40.6	41.4	42.1	42.7	43.4	
Net trade 7/		2.8	1.5	5.8	4.1	6.4	6.2	5.5	6.3	4.0	3.0	
Total		57.2	56.9	63.9	62.2	65.4	65.1	65.5	67.9	66.5	65.0	
Residual (production minus utilization)												
available for stocks, feed, and other uses		1.7	6.8	17.6	10.4	26.9	20.9	15.1	15.3	21.0	--	
Accumulated residual		1.7	8.5	26.1	36.5	63.4	84.3	99.4	114.7	135.7	--	

1/ Projections for utilization items only. Soviet production figures not announced.

2/ Official Soviet production data.

3/ Waste is assumed to be 5 percent of production.

4/ Seeding rate of 1.5 centners per hectare for wheat and 1.4 centners per hectare for rye assumed.

5/ Based on Khrushchev's stated figure of 4 million tons of grains for industrial uses in 1954. It is assumed that wheat and rye account for 60 percent. Furthermore, it is assumed that industrial use increased to 5 million metric tons total by 1962.

6/ Domestic consumption of 190 kilograms per capita of wheat and rye is assumed. The midyear population of the following year is used.

7/ Net trade for the following year, except for 1962 and 1963 for which only exports considered.

6.—Soviet Union: Wheat and rye balance, 1954-63. USDA estimates

Disposition		1954	1955	1956	1957	1958	1959	1960	1961	1962	1963 1/
<u>Production:</u>											
Wheat	.....	36.5	42.1	53.9	49.7	62.6	51.7	46.3	52.3	54.4	40.0
Rye	.....	15.6	16.5	14.1	14.5	15.7	15.2	13.2	15.2	13.7	12.0
Total	.....	52.1	58.6	68.0	64.2	78.3	66.9	59.5	67.5	68.1	52.0
<u>Utilization:</u>											
Waste 2/	.....	3.2	3.0	3.5	3.3	3.9	3.3	3.0	3.4	3.4	2.6
Seed 3/	.....	11.8	11.9	12.9	12.5	11.8	11.3	11.8	12.5	12.4	12.4
Industrial use 4/	.....	2.4	2.4	2.5	2.6	2.6	2.7	2.8	2.9	3.0	3.1
Total	.....	17.4	17.3	18.9	18.4	18.5	17.3	17.6	18.8	18.8	18.1
Domestic food consumption 5/	.....	37.3	37.9	38.6	39.3	40.0	40.6	41.4	42.1	42.7	43.4
Net trade 6/	.....	2.8	1.5	5.8	4.1	6.4	6.2	5.5	6.3	1/4.0	3.0
Total	.....	57.5	56.7	63.3	61.8	64.9	64.1	64.5	67.2	65.5	64.5
<u>Residual (production minus utilization)</u>											
available for stocks, feed, and other uses .....	-5.4	+1.9	+4.7	+2.4	+13.4	+2.8	-5.0	+0.3	+2.6	-12.5	
Accumulated residual .....	-5.4	-3.5	+1.2	+3.6	+17.0	+19.8	+14.8	+15.1	+17.7	+5.2	

## 1 / Projections

5 percent of wheat and rye production.

3/ Seeding rate of 1.5 centners per hectare for wheat and 1.4

Seed is taken from one year's crop for following year's sowing.

4/ Based on Khrushchev's stated figure of 4 million tons of grains for industrial uses in 1954. It is

assumed that wheat and rye account for 60 percent. Furthermore, it is assumed that industrial use increased to 5 million metric tons total by 1962.

5/ Domestic consumption of 190 kilograms per capita of wheat and rye is assumed. The midyear population

by the Soviet Union (table 5) and the other on USDA estimates (table 6). Identical utilization estimates are used in all the balances, except that the larger production indicated by the official Soviet figures leads to a larger amount of waste, given the same 5 percent waste factor. Since there is no information on stocks, they are treated as residual items.

The striking difference between the two balances is in the residual after all known utilization items have been accounted for. The substantial residual which appears in the balance based on Soviet official figures grew rapidly during the decade. The balance based on USDA estimates shows a much smaller residual, which is negative in 1954 and 1960. If the residuals are accumulated over the period 1954-62, the residual derived from official estimates amounts to about 135 million metric tons, while in the balance based on USDA estimates the residual amounts to about 18 million tons when the 1962 crop is fully utilized.

The implications of the two balances would seem to be that official Soviet figures of wheat and rye production would result in sufficient unaccounted for grain to equal more than 2 year's needs. This should have provided ample stocks--if the utilization estimates are correct.

It is difficult, however, to accept the proposition that the Soviet Union would spend large amounts of gold and foreign exchange for wheat if it had stocks anything like those that the balance based on official figures would indicate. Khrushchev has stated that "if we had the wheat we would not be buying it." <sup>7/</sup>

Conversely, the balance based on USDA production figures (table 6) provides only for modest stocks, particularly in the light of the sharp shortfall in 1963. Thus, the USDA estimates support the need for heavy imports of wheat by the Soviet Union. This is particularly so if it is considered that the Soviet Government is doubtless anxious to maintain an irreducible minimum of stocks, which may not be too far below the 18 million tons indicated by the residual in the above analysis. It is possible, of course, that utilization could have been actually greater than assumed here. In that case, USDA production estimates may be too low. However, given the information available at the present time--and it must be emphasized that it is still meager--it seems that USDA estimates are closer to reality than official Soviet figures, just as they were during the Stalin era.

Given the very large crop acreage in the Soviet Union, more favorable weather during the 1964 growing season would undoubtedly greatly improve the agricultural picture. It is premature at this juncture to discuss the outlook for the 1964 crop, but the dry fall in 1963 retarded the development of fall sown grain in some important regions and increased the danger of extensive winterkilling.

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<sup>7/</sup> Pravda, Oct. 27, 1963.

## Policy

The agricultural policy of the Soviet Government in 1963 was not characterized by significant organizational changes as was the case during the 2 preceding years. The central feature of the policy during the past year was the overriding emphasis on the rapid production increase and use of mineral fertilizers and to a lesser extent on other agricultural chemicals--pesticides and feed additives. This was followed in the fall of 1963 by a new stress on irrigation when the full effect of the devastating drought became clear.

As usual, Khrushchev spearheaded these programs. He stressed the crucial importance of fertilizers in a number of pronouncements, culminating in a long speech at the plenary session of the Central Committee of the Communist Party on December 9, 1963. This session, like that in May 1958, was convened to consider problems of accelerating the development of the chemical industry, this time with special attention to agriculture. Increased use of fertilizer is envisaged by the Soviet Government as a key to raising low crop yields. The Government now chiefly relies on such intensification of agriculture for growth in agricultural production since there is little land available that could be easily brought under cultivation.

Production of mineral fertilizer has greatly increased since the prewar period, nearly quadrupling between 1940 and 1958, when it reached 12.4 million metric tons. The Seven-Year Plan, 1959-1965, called for the production of 35 million tons (gross weight) by the end of the period. However, little headway was made during the first 3 years of the period. In 1962, however, 17.3 million tons were produced, an increase of 2 million tons over the preceding year. Output in 1963 reportedly rose to 19.9 million tons. The actual delivery of fertilizer to agriculture, however, was considerable less, increasing only from 10.6 million tons in 1959 to 13.6 million in 1962.

The gap is largely due to the fact that a sizable quantity of fertilizer is exported--over 3 million tons in 1962. Inferior quality and much waste and inefficiency in transportation, handling, storage, and application of fertilizer have been recognized and often severely criticized by Soviet authorities. According to a statement by some Soviet scientists in Izvestiya, November 17, 1963, the country does not obtain even half the benefit from the available mineral fertilizer which it could with more efficient utilization.

The new fertilizer program retains the high 1965 production target of 35 million tons compared with 20 million in 1963 and planned 25.5 million in 1964. The target for 1970 is 80 million tons. With these goals, the program calls for sharply increased investment in the chemical industry, contemplating purchase of manufacturing plants abroad. It also proposes measures to improve fertilizer quality and utilization.

The program further provides for sharply increased use of fertilizer on grain, which heretofore was little fertilized. The program for increased fertilizer use insists on concentration on the regions most advantageous from a climatic and soil standpoint. This is important because the Soviet Union has a large semiarid zone where fertilizer is less effective than in areas of higher rainfall. Although there appears to be a strong determination by the

Government to carry out the new fertilizer program, only time will tell whether the ambitious goals will be realized. Also, the emphasis on fertilizer as compared with other yield-increasing technologies may be overdone.

Dryland farming techniques particularly appear to be neglected, though greater official recognition has been given to them since the 1963 drought. This applies especially to summer fallow, considered generally by agronomic science a valuable means of moisture conservation and weed control in dry regions. Its use was officially discouraged in the USSR during the past few years in the pursuit of a larger crop area, but recently it has been restored to grace, though still insufficiently used. Some improvement in grain yields may be expected if the Government continues to push the fertilizer program during the next few years. Even small increments in yields per acre are magnified into substantial increases in output by the huge acreage in the USSR.

The 1963 drought focused official attention, as severe droughts had often done in the past, on greater use of irrigation, particularly for grain. Irrigated farming in the Soviet Union is concentrated in the cotton-growing republics of Soviet Central Asia and, to a lesser extent, in the Caucasian republics. Of the total area of 8,851,000 hectares having irrigation networks in 1962, these republics accounted for 7,150,000 hectares and the southern European regions for 1,701,000 hectares. Khrushchev in September 1963 toured irrigated farms of the Lower Volga, southern Ukraine, and North Caucasus. In a speech on September 17 in Volgograd (formerly Stalingrad) he said he was trying to learn the area of irrigated land required to obtain a "guaranteed" (stable) crop of approximately 1.5-2 billion poods (24.6-32.8 million metric tons) of grain annually. "This would serve as a kind of insurance reserve," said Khrushchev. "Of course, an insurance reserve can be created by building up stocks--this is the chief method and we must follow it. But besides, it would be well for us to have a definite area of irrigated land which would guarantee high yields, no matter what the weather."

This seemed to presage a new irrigation program as a response to successive droughts which have afflicted Soviet agriculture. Such a program was announced by Khrushchev on September 26 in a speech delivered in Krasnodar when he also disclosed for the first time the large purchase of grain abroad.

The irrigation program calls for the use of 2.6 million hectares of currently irrigated land for producing grains--mainly rice, corn, and wheat. This compares with 1,985,000 hectares of irrigated land on which grain was grown in 1962. Khrushchev further stated that, according to Soviet specialists, an additional area of 2.8 million hectares can be irrigated during the next few years at a cost of 7.3 billion rubles. The irrigation program has not been formalized, but in December 1963 the Central Committee directed the authorities concerned to prepare a detailed blueprint. A new high-level central agency was also created to coordinate irrigation activities throughout the country.

The policy of increasing Government procurement (purchase) prices, which began after Stalin's death in 1953 when such prices were extremely low and did not cover production costs, continued in 1963. This policy aimed to provide greater economic incentives to farmers to encourage increased production.

Procurement prices of cotton, sugar beets, and potatoes were raised in 1963. During the Stalin era cotton was a high value crop, and its price was increased little until last year. Then an increase of its procurement price was decreed to stimulate production, which in 1962 was smaller than in 1958, despite an increased area of 238,000 hectares. Beginning with the 1963 harvest, the price paid collective farms for unginned cotton was increased an average of 20 percent, and for state farms 12 percent. (All cotton in the Soviet Union is delivered to the State, which owns all the gins). In addition, the cotton growing republics may vary regional prices up to 10 percent above or below the newly established prices.

Sugar beet procurement prices were increased an average of 18 percent beginning with the 1963 harvest. The same decree ordered collective and state farms to deliver to sugar mills 10 million metric tons of sugar beets grown for animal feed. Use or storage of any beets on farms for feed in the zone of industrial sugar beet growing was prohibited until fulfillment of delivery plans to the sugar industry. The adverse weather effect on the beet crop was given as the reason for these provisions.

Capital investment in Soviet agriculture, which is essential to increased productivity, has risen substantially in the past decade (table 7).<sup>8/</sup> This trend will continue, judging from announced plans for State agricultural investments for productive purposes. It was set at 5.4 billion rubles for 1964 and 6 billion for 1965. If these plans are implemented, agriculture will receive a substantial increase in capital investment, as indicated in table 7.

Table 7.--Soviet Union: State productive investment in agriculture, 1951-65 <sup>1/</sup>

Year	: Million rubles <sup>2/</sup>	Index	Year	: Million rubles <sup>2/</sup>	Index
1951.....	1,025	100	1958.....	2,279	222
1952.....	971	95	1959.....	2,021	197
1953.....	881	86	1960.....	2,471	241
1954.....	1,536	150	1961.....	3,208	295
1955.....	1,992	194	1962.....	3,695	360
1956.....	2,118	207	1963.....	4,000 <sup>3/</sup>	390
1957.....	2,343	229	1964.....	5,400 <sup>4/</sup>	527
	:		1965.....	6,000 <sup>4/</sup>	585
	:			:	

<sup>1/</sup> Soviet Agriculture Today, Foreign Agricultural Economic Report No. 13, U.S. Dept. Agr., Washington, D.C., Dec. 1963, p. 66.

<sup>2/</sup> One ruble equals \$1.11 at the official Soviet exchange rate.

<sup>3/</sup> USDA estimate.

<sup>4/</sup> Pravda, Dec. 17, 1963, p. 5.

<sup>8/</sup> For a more detailed discussion of investment in Soviet agriculture see The 1963 Eastern Europe Agricultural Situation, p. 11, and Soviet Agriculture Today, Foreign Agricultural Economic Report No. 13, U.S. Dept. Agr., Washington, D.C., Dec. 1963.

It was stated that these investments would be used to increase irrigation facilities, livestock housing, and the supply of machinery and other equipment. It was also announced that the Government would increase its loans to collective farms by 2.8 billion rubles in 1964 and 1965. These investments are in addition to expenditures planned for the fertilizer program. They do not include collective farm investment, which customarily amounts to between 2.5 billion and 3 billion rubles annually.

A significant departure from previous policy is the deemphasis of corn and the correspondingly greater priority given to winter wheat and other crops in subhumid regions. Khrushchev--the chief sponsor of corn--advocated such a restructuring of the crop pattern at the December 1963 session of the Central Committee.

#### Food situation

The food situation during the latter part of 1963 and early in 1964 had two outstanding characteristics: a tightening of the previously abundant bread supply and a relatively abundant though high-priced meat supply. The tightening of the bread supply is evidenced by: (1) strict observance in state retail stores of the existing regulation limiting the purchase of bread by a person at any one time to 2 kilograms (4.4 pounds); (2) raising the milling rate of flour, thus economizing on grain but depressing bread quality; (3) using admixtures of corn and other grains in bread; (4) scarcity of white bread and macaroni products; (5) virtual disappearance of flour from retail outlets; and (6) a widespread press campaign against feeding breadstuffs to livestock.

While some panic buying was reported during the early fall, there were no indications of a serious bread shortage in the cities. The situation in the countryside is obscure, but if Government grain procurements are as high relative to production as reported, some rural areas may need supplementary grain supplies to avoid shortages.

The relatively abundant meat supply is due to increased slaughtering caused by shortages of feed and the sharply increased meat procurement prices in effect since mid-1962. High retail prices also contribute to the availability of meat by checking demand.

#### Foreign trade

The most important feature of the Soviet foreign trade situation during 1963 was the importing of wheat, which reversed the Soviet Union's traditional role as a large grain exporter. Agreements were concluded in September 1963 for the purchase of 6.5 million metric tons of wheat and flour (in wheat equivalent) from Canada and 1.75 million tons from Australia. Also, a loan of 400,000 tons of wheat from Rumania was announced and small quantities of flour were purchased from West Germany, France, and Italy. Contracts to purchase wheat from the United States totaled 1.7 million tons as of mid-February 1964. Altogether, purchases and commitments to purchase wheat and flour during 1963-64 exceeded 10 million tons as of February 10, 1964. While importing grain

from the West, the Soviet Union continues to export grain to the Bloc countries, although in smaller quantities than in recent years. Soviet export commitments to a number of western countries were canceled in the fall of 1963.

These events sharply color any interpretation of the 1962 statistical data, which are the latest detailed figures available (tables 8 and 9). The continued rise in grain exports in 1962, the decline in the usually insignificant grain imports, and the large officially-reported grain crop might have been misleading, implying great abundance. But certain peculiarities of the Soviet grain trade and knowledge of relatively poor harvests in 1961 and 1962 in the Soviet Union and the Bloc countries suggest that stocks must have declined seriously. The decline in wheat exports to the Bloc in 1961 and the maintenance of this relatively low level in 1962, together with rising exports of rye since 1959 suggested the possibility of grain difficulties even before the disastrous Soviet harvest of 1963.

The tripling of Soviet exports of corn in 1962, principally to the Bloc, can be attributed to feedgrain shortages in the Bloc and the large corn crop in the USSR in 1962. Some of the increase in Soviet exports of grains to the Bloc was a result of the inclusion of Cuba in the Bloc. A much more important reason was the reversal of Communist China's position from a net grain exporter to a net grain importer. In 1961 the Soviet Union supplied Communist China with 100,000 metric tons each of wheat and rye. The same amount of wheat was supplied again in 1962 and almost 250,000 metric tons of rye. Meanwhile imports of rice from Communist China dropped to a token volume in 1961 but rose to 150,000 in 1962. These rice imports were supplemented by more than the same volume from non-Bloc sources, reducing Soviet rice imports in 1962 to the low level of 1957.

The Soviet Union in 1962 was an even larger net exporter of oilseeds and vegetable oils than in 1961. In earlier years (1960 for oilseeds, 1958 for vegetable oils) the Soviet Union was a net importer, obtaining large quantities of soybeans and vegetable oils from Communist China. The loss of that country as a supplier resulted in increased imports both from other Bloc and non-Bloc countries. Apparently, it also meant that the Soviet Union had to increase its exports of these commodities to Bloc countries formerly supplied by Communist China. This trend was especially noticeable in the oilseed trade. Soviet trade in vegetable oils in 1961 and 1962 not only showed a sharp rise in exports to the Bloc but also to other countries, especially West Germany.

The Soviet Union in 1962 was a net importer of meat and meat products, exclusive of the live animals regularly imported for slaughter, especially from Mongolia. These net imports of meat resulted from unusually large imports in 1962 from non-Bloc countries since imports from the Bloc remained the same and exports, made only to Bloc countries, rose moderately. From 1959 through 1961, the Soviet Union exported meat and meat products on a small scale.

Soviet imports of eggs in 1962 dropped to less than half the quantity of 1961. In the late 1950's Communist China was the principal supplier with Bulgaria in second place. Imports from Communist China rose to a sharp peak in 1958 and then declined to zero in 1962. Imports from Bulgaria were increased in 1960 and again in 1961, supplemented by unusually large imports

Table 8.--Soviet Union: Principal agricultural imports, annually, 1955-62 1/

Commodity	1955	1956	1957	1958	1959	1960	1961	1962
: - - - - - <u>1,000 metric tons</u> - - - - -								
<b>Animals for slaughter, live-weight</b>								
Bloc	126.4	135.7	101.7	109.6	114.0	121.2	152.5	136.9
Other	118.8	127.3	97.7	109.6	114.0	121.2	149.1	130.7
Other	7.6	8.4	4.0	0	0	0	3.4	6.2
<b>Meat and meat products (excluding lard)</b>								
Bloc	240.8	207.3	116.8	156.6	112.8	66.9	59.7	149.1
Other	174.1	156.3	80.5	144.0	98.1	58.7	56.1	56.5
Other	66.7	51.0	36.3	12.6	14.7	8.2	3.6	92.6
Eggs 2/	230.8	225.2	224.4	373.0	110.0	113.2	160.5	66.3
Bloc	225.3	218.9	217.7	365.4	102.5	112.3	159.3	64.5
Other	5.5	6.3	6.7	7.6	7.5	.9	1.2	1.8
Wheat	29.1	443.3	122.1	323.3	246.9	98.0	655.9	45.1
Bloc	29.1	40.8	1.5	40.2	48.0	98.0	167.2	45.1
Other	0	402.5	120.6	283.1	198.9	0	488.7	0
Flour, in terms of grain 3/	62.1	54.8	55.1	32.4	38.5	29.4	28.1	27.6
Bloc	26.9	25.4	25.0	4/	10.6	4/	0	0
Other	35.2	29.4	30.1	32.4	27.9	29.4	28.1	27.6
Rice	487.1	637.6	370.5	500.5	689.1	501.1	19.9	337.5
Bloc	292.7	457.6	181.1	472.8	658.4	450.9	19.9	150.2
Other	194.4	180.0	189.4	27.7	30.7	50.2	0	187.3
Fruit, fresh	132.9	157.5	218.1	334.5	301.4	334.8	316.5	345.6
Bloc	81.8	108.2	151.0	254.8	234.9	227.9	193.8	224.2
Other	41.1	49.3	67.1	79.7	66.5	106.9	122.7	121.4
Fruit, dried	28.3	37.7	48.0	66.7	54.4	76.7	83.9	77.2
Bloc	4.1	7.8	10.7	12.7	18.5	17.9	20.5	13.3
Other	24.2	29.9	37.3	54.0	35.9	58.8	63.4	63.9
Vegetables	70.3	51.0	113.6	137.4	203.1	214.9	281.6	291.7
Bloc	26.2	30.6	56.7	96.2	154.9	197.7	260.9	277.7
Other	44.1	20.4	56.9	41.2	48.2	17.2	20.7	14.0
Sugar, refined	921.7	324.3	625.5	367.7	311.1	1,614.2	3,387.4	2,339.2
Bloc 5/	780.7	323.7	440.7	363.7	311.1	1,604.3	3,386.7	2,338.2
Other	141.0	.6	184.8	4.0	0	9.9	.7	1.0
Coffee, cocoa, and tea	25.8	35.7	70.2	40.2	82.9	99.8	65.2	87.4
Bloc	10.2	12.8	11.9	13.8	18.0	11.0	3.5	3.8
Other	15.6	22.9	58.3	26.4	64.9	88.8	61.7	83.6
Tobacco, raw	55.2	73.3	91.1	84.3	96.6	74.2	57.8	66.6
Bloc	50.4	64.5	82.1	71.3	85.9	62.6	44.7	38.1
Other	4.8	8.8	9.0	13.0	10.7	11.6	13.1	28.5
Hides, raw 2/	9.0	13.4	21.3	22.6	21.6	23.0	18.5	19.5
Bloc	4.5	5.6	5.5	4.7	4.1	2.0	1.5	1.0
Other	4.5	7.8	15.8	17.9	17.5	21.0	17.0	18.5
Oilseeds	759.9	801.5	716.0	551.7	715.2	418.5	90.2	57.3
Bloc	753.3	796.5	713.9	542.5	710.5	403.6	14.4	1.3
Other	6.6	5.0	2.1	9.2	4.7	14.9	75.8	56.0
Rubber, natural	35.3	140.7	145.5	258.7	242.1	190.9	360.3	361.7
Bloc	1.0	16.9	48.1	36.1	23.9	7.9	0	0
Other	34.3	123.8	97.4	222.6	218.2	183.0	360.3	361.7
Cotton, raw	19.9	51.4	108.8	142.1	190.3	193.1	141.6	150.2
Bloc	0	.9	.8	0	71.5	46.9	11.3	8.2
Other	19.9	50.5	108.0	142.1	118.8	146.2	130.3	142.0
Wool, washed	46.5	48.5	57.3	55.2	57.8	61.5	55.3	48.6
Bloc	27.5	25.5	24.2	21.0	22.2	20.9	16.8	14.5
Other	19.0	23.0	33.1	34.2	35.6	40.6	38.5	34.1
Vegetable oils	195.3	96.5	45.6	73.3	71.6	59.3	54.4	15.1
Bloc	107.4	87.7	42.9	71.0	68.9	33.5	2.5	.7
Other	87.9	8.8	2.7	2.3	2.7	25.8	51.9	14.4

1/ Source: Vneshnyaya torgovlya SSSR za 1955-1959 gody and subsequent editions.

2/ In millions.

3/ 80 percent milling rate.

4/ Less than 500 metric tons.

5/ Raw sugar converted to refined at rate of 1 metric ton = .9434 metric tons refined.

Table 9.--Soviet Union: Principal agricultural exports, annually, 1955-62 1/

Commodity	1955	1956	1957	1958	1959	1960	1961	1962
1,000 metric tons								
Meat and meat products .....	11.1	31.2	76.5	35.3	179.0	78.1	66.0	133.7
Bloc .....	10.3	31.2	76.5	35.2	175.3	76.3	65.7	130.5
Other .....	.8	0	0	.1	3.7	1.8	.3	3.2
Butter .....	5.1	26.4	49.1	24.7	80.3	37.2	55.6	69.7
Bloc .....	5.0	26.3	49.0	24.7	79.5	35.8	55.6	69.7
Other .....	.1	.1	.1	0	.8	1.4	0	0
Wheat .....	2,035.8	1,452.4	5,450.8	3,878.7	6,052.0	5,624.4	4,800.6	4,765.2
Bloc .....	1,650.5	547.6	4,573.4	2,836.5	4,365.3	4,279.4	3,275.3	3,216.3
Other .....	385.3	904.8	877.4	1,042.2	1,686.7	1,345.0	1,525.3	1,548.9
Flour, in terms of grain 2/ .....	112.4	63.9	93.0	84.5	103.1	47.1	314.0	314.2
Bloc .....	109.1	60.0	87.6	79.3	99.2	42.6	311.9	266.8
Other .....	3.3	3.9	5.4	5.2	3.9	4.5	2.1	47.4
Rye .....	698.9	519.4	440.6	416.0	548.9	682.5	1,088.0	1,300.3
Bloc .....	576.3	351.3	317.6	341.1	371.4	514.0	856.3	1,094.5
Other .....	122.6	168.1	123.0	119.9	177.5	168.5	231.7	205.8
Barley .....	565.0	785.4	1,214.0	278.3	121.6	324.0	1,006.8	466.8
Bloc .....	496.6	482.8	804.4	144.7	25.4	144.4	301.2	390.7
Other .....	68.4	302.6	409.6	133.6	96.2	179.6	705.6	76.1
Oats .....	75.6	164.3	223.5	261.1	131.4	41.5	179.9	25.3
Bloc .....	38.9	84.9	178.3	137.2	50.1	16.0	120.9	8.9
Other .....	36.7	79.4	45.2	123.9	81.3	25.5	59.0	16.4
Corn .....	307.4	293.7	84.6	220.5	154.9	122.2	405.6	1,256.7
Bloc .....	217.3	244.8	24.5	208.4	53.0	47.7	229.6	1,003.8
Other .....	90.1	48.9	60.1	12.1	101.9	74.5	176.0	252.9
Sugar, refined .....	209.7	174.4	190.5	200.4	197.2	242.9	3/886.3	792.4
Bloc .....	14.8	12.4	14.0	11.5	10.8	4.5	3/476.3	135.1
Other .....	194.9	162.0	176.5	188.9	186.4	138.4	410.0	657.3
Oilcake .....	146.3	111.8	192.6	365.4	575.2	496.4	386.1	348.6
Bloc .....	14.4	16.4	14.7	35.7	29.5	30.2	33.2	44.4
Other .....	131.9	95.4	177.9	329.7	545.7	466.2	352.9	304.2
Tobacco, raw .....	4.4	7.5	6.0	6.2	7.1	1.6	2.9	1.8
Bloc .....	2.3	4.6	4.0	4.0	4.7	0	0	0
Other .....	2.1	2.9	2.0	2.2	2.4	1.6	2.9	1.8
Oilseeds .....	66.5	59.8	49.8	47.1	83.3	110.4	120.7	112.7
Bloc .....	53.4	51.8	49.3	46.1	60.0	74.5	83.1	108.7
Other .....	13.1	8.0	.5	1.0	23.3	35.9	37.6	4.0
Cotton, raw .....	336.9	309.5	318.7	310.9	344.5	390.0	382.6	343.6
Bloc .....	264.6	251.5	270.9	275.1	269.2	306.0	325.5	292.8
Other .....	72.3	58.0	47.8	35.8	75.3	84.9	57.1	50.8
Wool, washed .....	14.8	12.8	13.8	17.0	16.9	18.0	28.1	24.2
Bloc .....	11.3	10.3	11.5	12.4	13.2	15.3	26.0	21.6
Other .....	3.5	2.6	2.3	4.6	3.7	2.7	2.1	2.6
Vegetable oils .....	24.0	55.6	47.8	52.2	82.5	91.8	121.8	152.5
Bloc .....	19.0	52.1	44.8	49.9	73.8	75.4	110.5	117.1
Other .....	5.0	3.5	3.0	2.3	8.7	16.4	11.3	35.4

1/ Source: Vneshnyaya torgovlya SSSR za 1955-1959 gody and subsequent editions.

2/ 80 percent milling rate assumed.

3/ Includes 501,000 metric tons of raw sugar (equivalent to 472,600 metric tons refined) to Communist China.

from Poland. But in 1962, imports from Bulgaria dropped sharply and only token numbers were imported from Poland, resulting in the lowest egg imports in 8 years.

Soviet exports of sugar in 1962 fell by almost 100,000 metric tons and imports were down a million metric tons because of the decrease in Cuban supplies. The resulting net imports, however, were still very much larger than in the days before Cuba joined the Bloc.

Exports of tobacco from the Soviet Union dropped again in 1962 while imports increased 15 percent. The rise in imports came from non-Bloc sources, principally India. Imports from the Bloc continued the decline occasioned by shortages in supplies from Communist China and Bulgaria, the major Bloc suppliers. The improvement in the Bulgarian crop in 1963 should increase the supplies from this source. Low-grade Indian tobacco apparently was substituted for imports from Communist China.

Soviet cotton exports dropped slightly in 1962 while imports rose a little, narrowing the net export position to 200,000 metric tons. Imports were almost entirely from non-Bloc countries and more than 80 percent of exports were to Bloc countries. Both exports and imports of wool dropped slightly in 1962.

Until the recent wheat purchases, raw rubber had been the largest Soviet agricultural import in terms of value since 1957. Imports fell off quite sharply in 1960, but 1961 saw a record of 360,000 metric tons imported. Imports of rubber were even larger in 1962 with Malaya, as usual, supplying more than half the total. Reports in the fall of 1963 indicated a continuance of large imports, but it seems unlikely that they will be maintained at the same rate now that large sums of convertible currency must be spent on wheat and flour.

In the light of Khrushchev's recently announced major program to expand the chemical industry, especially fertilizer production, it is interesting to note that the Soviet Union was a net exporter of mineral fertilizers during 1955-62. These exports included apatite concentrate, superphosphates, and ammonium sulphate and nitrate. Imports have been insignificant. Over the years these exports have doubled or trebled. The uptrend continued in 1962 despite a drop in ammonium sulphate and superphosphates. The volume of all these exports in 1962 was equal to more than 25 percent of total fertilizer deliveries to Soviet agriculture. Exports of phosphate and potash amounted to more than 40 percent of deliveries to Soviet agriculture; exports of nitrogenous fertilizers approximated 10 percent.

The Soviet Union exported 12,400 tractors in 1962, more than twice the minimum number exported in 1956 but well below the maximum of 18,900 in 1960. On the average, more than 80 percent of these exports went to Bloc countries and the remainder almost entirely to developing countries. Except for a few prototypes, tractors were not imported during the period 1955-62 for which data are available. In 1962 the Soviet Union exported 5,300 combines. This was below the maximum export of 5,500 in 1960 but much above the minimum of 800 in 1957. An average of 92 percent of the combines exported were to Bloc

countries. There have been few imports of combines except in 1957, 1958, and especially 1962 when a record number of 1,865 were imported from East Germany.

## POLAND

### Production

Agricultural production in Poland during 1963/64 declined for the second successive year following the record output of 1961/62. Gains in some individual commodities were not great enough to overcome the effects of a hard winter and reduced livestock numbers.

Production of the 4 major grains was up about 1 million tons, nearly 8 percent increase over the 1962 crop (table 10). This was due to a small increase in the acreage and better yields. Wheat production has been increasing during recent years because of a continuing shift of acreage from rye to wheat. The acreage of barley and oats also increased during 1963. Oilseed production declined significantly. Large areas of rape were winterkilled, and the average yield in remaining fields dropped to the lowest level in 5 years. The 1963 potato harvest was the second largest on record, as a result of improved weather conditions during the last part of the growing season. The sugar beet harvest, although on smaller acreage, was somewhat better than in 1962. Vegetable production in 1963 was much improved over the preceding year and was generally good. The fruit harvest, though disappointing, was better than first expected and larger than in 1962. Hay and forage production was lower than in 1962. After a good first cutting of hay, further growth was greatly reduced by hot dry weather. Production of tobacco increased approximately 30 percent due to expanded acreage and higher yields. Hop production was a little higher than in 1962, reflecting increased acreage and higher yields. Some hops are exported, but their main use is by the domestic brewing industry. Poland became a net exporter of beer in 1962.

Livestock production was perhaps the largest single item responsible for underfulfillment of the agricultural production plan in 1963. The unfavorable feed situation resulting from the poor 1962 harvest necessitated heavy slaughter during the last quarter of 1962 and the first quarter of 1963. Based on the official June 1963 census, the number of hogs declined nearly 15 percent and sheep 6 percent from the previous year. Cattle, on the other hand, showed a 3 percent increase over June 1962. Meat production from domestic slaughter is expected to be down due to efforts to replenish the herds. The Government is offering feed assistance and other economic incentives in an attempt to maintain or increase hog and cattle numbers. Government purchases of livestock (carcass weight equivalent) during the first 11 months of 1963 were nearly 11 percent lower than during the same period of 1962. Milk purchases were 7 percent lower and eggs 13 percent.

The planned increase of 5.8 percent in agricultural output in 1963 was not achieved. On the contrary, it is estimated that combined livestock and crop production was at least 3 percent below 1962. A second successive year of declining agricultural output apparently has had a sobering effect on Polish agricultural planners. Agricultural output in 1964 is now planned to increase only 1.2 percent compared with the originally planned increase of 4.1 percent.

Table 10.--Poland: Area and production of principal crops, output of animal products, and number of livestock, average 1955-59,  
annual 1960-63 <sup>1/</sup>

Item	1955-59 average :			1960			1961			1962			1963 <sup>2/</sup>		
	Area	Production	Area	Production	Area	Production	Area	Production	Area	Production	Area	Production	Area	Production	Area
	1,000 hectares	1,000 metric tons		1,000 hectares	1,000 metric tons		1,000 hectares	1,000 metric tons		1,000 hectares	1,000 metric tons		1,000 hectares	1,000 metric tons	
Field crops:															
Wheat	1,449	2,276		1,361	2,303		1,401	2,792		1,393	2,700		1,542	3,070	
Rye	5,079	7,288		5,122	7,878		4,880	8,356		4,700	6,685		4,383	7,122	
Barley	752	1,170		717	1,310		679	1,339		663	1,315		748	1,477	
Oats	1,674	2,448		1,641	2,774		1,602	2,940		1,584	2,740		1,682	2,824	
Potatoes	2,745	34,135		2,876	37,855		2,819	45,203		2,910	37,817		2,840	44,817	
Sugar beets (factory)	366	7,147		401	10,262		420	11,555		430	9,652		372	10,630	
Rapeseed <sup>3/</sup>	109	109		108	147		165	240		250	325		175	215	
Livestock:															
Products:															
Red meat <sup>4/</sup>	---	613		---	1,756		---	1,916		---	1,943		---	1,900	
Milk	---	11,078		---	12,487		---	12,759		---	12,861		---	12,963	
Eggs	---	---		Million units	5,485		Million units	5,589		Million units	6,141		Million units	6,092	
Number: <sup>5/</sup>				1,000 head			1,000 head			1,000 head			1,000 head		
Cattle	---	8,219		---	8,695		---	9,168		---	9,590		---	9,841	
Hogs	---	11,588		---	12,615		---	12,434		---	13,617		---	11,653	
Sheep	---	4,053		---	3,662		---	3,494		---	3,251		---	3,056	
Horses	---	2,660		---	2,805		---	2,730		---	2,657		---	2,620	

<sup>1/</sup> Official Polish data unless otherwise indicated: *Rocznik Statystyczny*, 1962; *Buletyn Statystyczny*, No. 12 1963.

<sup>2/</sup> USDA preliminary estimates except for area and livestock numbers.

<sup>3/</sup> State purchases only.

<sup>4/</sup> Carcass weight.

<sup>5/</sup> June of indicated year.

## Agricultural inputs

Since most Polish farms are small--averaging about 5 hectares--mechanization is fairly limited and concentrated on state and collective farms and in "agricultural circles" (associations of private farmers for the purpose of mechanization and purchases of other agricultural inputs). Although the number of tractors in agriculture increased from 28,411 to 83,224 between 1950 and 1963, only 15 percent were privately owned as of January 1, 1963. The increase was greatest in agricultural circles followed by state and collective farms. The number of privately owned tractors has remained at a constant figure of 12,500 since 1960. Noteworthy is the fact that the number of tractors in the Machine Tractor Stations servicing collectives and agricultural circles has been declining since 1955. This is largely due to allocating tractors directly to agricultural circles in areas of high production. During 1963 there were 152 hectares of sown area per 15 hp. tractor unit compared with 176 hectares in 1961 (table 30).

Fertilizer consumption has been steadily increasing in Polish agriculture. It is no longer necessary to persuade farmers to use mineral fertilizer; conversely, shortages have been experienced recently. During 1963, 81.3 kilograms of mineral fertilizer, in terms of plant nutrients, were used per hectare of sown area compared with 59 in 1961. Plans through 1965 call for substantial increases in fertilizer production and utilization.

## Policy

Since the decollectivization of agriculture in 1956, Polish farmers have been permitted to retain their freedom of choice regarding joining collectives. As a result, small privately owned farms predominate. Compulsory deliveries from private farms remain in effect, although quotas are smaller than in the mid-1950's. The quantities of fertilizer and improved seed available to private farmers have been increased substantially.

Elimination of the immediate threat of collectivization has given private farmers a greater incentive to produce, as reflected in output statistics of recent years. Nevertheless, the private farmer continues to work at considerable odds compared with state and collective farms and agricultural circles.

Private farms account for 86 percent of total arable land area and produce over 85 percent of all crop and livestock products (table 31). The average size of the individual farm is about 5 hectares. The legal maximum size is more than 100 hectares in the Western Territories annexed from Germany after World War II and 50 hectares in the other two-thirds of the country. State farms currently account for 12 percent of the arable land area and collectives for only a little over 1 percent. Agricultural circles are the means employed by the Government to educate farmers in collective principles, for agricultural collectivization remains an ultimate goal of Polish agrarian policy.

Most agricultural produce moves to market through state channels, either by compulsory deliveries or contractual sales to the Government. Compulsory delivery from private producers is the major mechanism by which the Government maintains its hold on agriculture. Fulfillment of compulsory delivery quotas,

which are based on farm size and productivity, is a prerequisite to other off-farm sales, including direct sales to consumers on a free-market basis. The low prices paid by the Government are essentially a form of taxation. In addition to compulsory deliveries and contractual procurements the Government also purchases agricultural commodities on the free market at prices higher than those paid for compulsory and contractual deliveries.

Land taxation is another means by which the Government controls private farming. Since the tax rate has increased progressively with the size and productivity of farms, it has been a major factor in restricting the size of private farms. One of the results of the land tax structure has been farm fragmentation which has necessitated the enactment of laws to establish minimum sizes for individual farms. The minimum ranges from 2 to 4 hectares.

A significant new policy development during 1963 was the introduction of the "Agrominimum," a complex of improved farm practices which are to be employed on every farm to increase output. Agricultural circles are the main channels through which this new law is to be effected. That the Government is strongly intent on implementing this policy is evidenced by the fact that farmers who fail to cooperate will not be able to obtain building materials, feed, seed, fertilizer and other inputs.

Agricultural investment in Poland has been continually rising. Between 1955 and 1962 the annual allocation of state funds for developing agriculture has nearly doubled. Deliveries of tractors, machinery, mineral fertilizer, and insecticides have been increasing, but in quantities insufficient to meet requirements. The private farmer remains reluctant to make long-term investments because of his continued fear of eventual collectivization. However, private farmers would purchase more fertilizer, improved seeds, and other short-term inputs if they were available. Allocation of a large share of available inputs to state and collective farms precludes this possibility. Failure to meet the agricultural production plans during the past few years apparently has made the Government more aware of the need to increase investment in agriculture.

#### Food situation

The food situation in Poland during 1963/64 is expected to be no better than in 1962/63, which was not a good year. There will be less food available from domestic production than in 1962/63 and larger imports of grain will be necessary to meet food and feed requirements. Meat supplies will be down due to heavy slaughter during the last quarter of 1962 and the first quarter of 1963, which reduced the number of animals available for slaughter during 1963/64. The meat shortage is illustrated by a Polish press report, saying it was necessary to import 45,000 metric tons of meat during 1963, including 30,000 from the USSR. The average prices of meat and dairy products on the free market were higher in 1963 than in 1962 by the following percentages: pork, 4 percent; hog fat, 10 percent; dairy products, 6 percent; and eggs, 10 percent.

Animal fats and vegetable oils will continue to be in short supply during 1963/64. Heavy losses of rape during the winter of 1962/63 and a smaller

slaughter of hogs will limit the fat supply and necessitate additional imports. There will also be shortages of butter, milk and other dairy products. Vegetable and fruit supplies are more satisfactory and should meet the market requirements. The prices of all vegetables, with the exception of peas and beans, were lower in mid-1963 than a year earlier. The supply of potatoes is expected to be adequate.

Failure to produce the planned quantities of food for the second successive year, the need of additional imports, and shortages of traditional agricultural export commodities will have an adverse effect on the national economy. Apparently, this has caused the Government to reassess its economic policy, particularly with respect to increasing allocations to agriculture.

#### Foreign trade

Agricultural products are important in Polish foreign trade. Livestock products and sugar are the major export commodities, while grains, animal feed, cotton, fats, oilseeds, tobacco, and hides are major import commodities (tables 11 and 12). Due to shortfalls in agricultural production during 1963, agricultural exports are being reduced and some traditional export commodities--such as butter--are being imported.

About 60 percent of Poland's trade in recent years has been with the Bloc, about half of which has been with the Soviet Union. In 1962 agricultural products accounted for 22 percent of all exports and 25 percent of all imports. A large share of these exports went to the West to provide badly needed foreign exchange. Exports to the West are primarily of livestock origin including bacon, canned hams, butter, poultry, and eggs. On the import side, barley, rye, wheat, rice, tobacco, cotton, fats, and hides are of major importance.

U.S.-Polish trade in agricultural commodities was greatly increased as a result of P.L. 480 agreements which began in 1957. The most recent P.L. 480 agreement was concluded in February 1964 in the amount of \$60.9 million. Since 1957 the value of commodities shipped to Poland under P.L. 480 Title I totals \$538.2 million including ocean transportation.

The latest agreement includes a \$30.7 million purchase with a 10-year payment moratorium, and a \$30.2 million purchase with a 3-year repayment agreement. Included in the Title I purchase are \$30 million worth of wheat, \$10.8 million of edible oils and \$10.5 million of cotton. In addition, an agreement was signed for the commercial purchase of \$30 million worth of feed grains, wheat, cotton, and rice for dollars during 1964.

Imports of breadgrains and feedgrains are expected to total about 3 million metric tons during 1963/64, approximately 500,000 tons more than during the preceding year. Soviet grain is imported under a long-term agreement that stipulates the delivery of 400,000 metric tons of grain annually. Poland in November 1963 concluded a 3-year agreement with Canada for the purchase of 1.2 million tons of wheat. Imports from France, which have averaged about 400,000 metric tons annually in recent years, are expected to total approximately 570,000 metric tons during 1963/64.

Table 11.--Poland: Principal agricultural imports, annually, 1955-62 1/

Commodity	1955	1956	1957	1958	1959	1960	1961	1962
Meat and meat products:	2	2/	7	16	46	18	10	4
Wheat .....	739	664	1,794	666	1,313	1,700	1,739	1,504
Rice .....	31	32	28	28	101	100	60	48
Coarse grains .....	433	350	142	439	377	386	681	670
Fruits and vegetables :	3/	3/	3/	34	35	39	62	145
Fruit, citrus.....	10	17	27	35	52	32	36	35
Tea and coffee 4/ ....	3	5	6	5	14	7	6	11
Cocoa beans 4/ .....	5	6	6	9	8	11	10	12
Tobacco .....	12	10	12	12	13	12	12	15
Cotton .....	95	86	121	105	105	127	140	121
Vegetable oils and animal fats 5/ .....	66	77	101	69	109	108	113	102

1/ Source: Rocznik Statystyczny, 1962.

2/ Less than 500 tons.

3/ Not available.

4/ Tons.

5/ Includes oilseeds in terms of oil.

Table 12.--Poland: Principal agricultural exports, annually, 1955-62 1/

Commodity	1955	1956	1957	1958	1959	1960	1961	1962
Pigs for slaughter 2/ :	3/	3/	3/	42	34	29	64	46
Meat and meat products 4/ .....	68	70	75	78	84	93	153	154
Canned hams .....	13	13	13	13	16	17	17	17
Lard .....	5/	3/	11	12	7	4	8	23
Butter .....	4	5/	1	24	23	29	27	27
Eggs 6/ .....	417	413	426	517	837	1,123	1,636	1,219
Coarse grains 7/ .....	44	26	42	74	45	100	125	52
Sugar refined .....	372	61	98	{ 222	270	244	404	469
Sugar raw .....				0	12	72	257	265

1/ Source: Rocznik Statystyczny, 1962. 2/ Slaughter weight. 3/ Not available. 4/ Excluding canned hams. 5/ Less than 500 tons. 6/ Millions, fresh equivalent. 7/ Includes malt in terms of barley.

## EAST GERMANY

### Production

The 1963 output of most grains and field crops in East Germany was below the 1962 harvest while production of livestock products was somewhat higher. Total agricultural production for 1963/64 is estimated to be slightly above a year earlier. Weather conditions during the summer of 1963 were dry and hot, whereas a year earlier temperatures were considerably lower and precipitation greater than normal. The major unfavorable impact on crops came from the extremely dry fall in 1962 and the exceptionally cold winter that followed.

Fall sown grains suffered from lack of moisture and winterkill. Total grain production was estimated to be down 10 percent from the preceding year despite a reported increase in sown area (table 13). The potato crop was down in 1963 primarily due to a decrease in sown area, while sugar beet production was higher than in any year since 1960, a record year for most crops. Vegetable production, except for late vegetables, was reported to be much improved over 1962.

The downtrend in livestock numbers and meat production seems to have been stopped with a reported increase in livestock numbers--especially hogs and cattle--and livestock production. Inadequate livestock feed supplies still plague livestock production, however, and although meat and milk production was somewhat better than during the preceding year, poultry and egg production was lower. Favorable fall weather enabled farmers to offset the effects of the dry summer by cutting additional hay. Foot-and-mouth disease was widespread in 1962, but appears to have been contained in 1963.

Probably the most significant development in East German agriculture in 1963/64 is the apparent halting of the downtrend in output clearly evident since 1960. Although the 1963 results were still below those of 1960, the precipitous drop in production following collectivization of the remaining half of East German agriculture in 1960 appears to have been stopped (table 1). Some of this decline was recouped in 1962 and some degree of stability at this lower level was maintained in 1963.

### Agricultural inputs

East Germany suffers from shortages of labor and managerial personnel in agriculture. According to official statistics, it has continually increased the quantity of machinery available to agriculture. The number of tractors in agriculture increased from 11,000 in 1950 to approximately 100,000 in 1962 (table 30). All the tractors may not be in operating condition. The number of horses declined about half during the same period. From 1950 to 1962 the ratio of arable land per tractor dropped from 430 hectares to 43 hectares. Nevertheless, agriculture is dependent on nonagricultural personnel--soldiers, office workers, and others--to assist during the harvest period and other peak periods of agricultural production.

Utilization of mineral fertilizer in East Germany is traditionally far higher than in other East European countries, especially the Soviet Union. In terms of plant nutrients, 198 kilograms of fertilizer (N, P<sub>2</sub>O<sub>5</sub>, and K<sub>2</sub>O)

Table 13.--East Germany: Area and production of principal crops, output of animal products, and number of livestock, average 1955-59,  
annual 1960-63 <sup>1/</sup>

Item	1955-59 average :		1960		1961		1962		1963 <sup>2/</sup>	
	Area : Production	Area : Production								
Field crops:										
Wheat	414.9	1,183	418.0	1,369	377.3	976	423.1	1,236	440.0	1,100
Rye	1,109.6	2,137	946.5	1,999	825.1	1,414	811.4	1,623	800.0	1,444
Barley	334.3	870	389.4	1,193	432.3	890	374.5	1,094	380.0	974
Oats	455.0	1,050	358.6	947	350.6	804	372.2	990	375.1	900
Potatoes	795.2	11,653	770.2	13,635	681.6	7,755	741.9	12,221	680.0	11,073
Sugar beets (factory)	218.3	5,346	237.7	6,495	217.9	4,424	232.4	4,721	232.3	4,888
Rapeseed	125.0	158	116.1	169	117.7	158	101.2	151	110.0	140
Livestock:										
Products:										
Red meat <sup>3/</sup>	---	1,015	---	1,097	---	1,139	---	978	---	1,037
Poultry <sup>3/</sup>	---	46	---	66	---	73	---	73	---	70
Other <sup>3/</sup>	---	58	---	64	---	56	---	52	---	50
Milk <sup>4/</sup>	---	4,809	---	5,157	---	5,051	---	4,694	---	4,815
Eggs	---	---	---	---	---	---	---	---	---	---
Number: <sup>2/</sup>										
Cattle	---	6/3,842	---	4,465	---	4,675	---	4,517	---	4,508
Hogs	---	6/8,279	---	8,283	---	8,316	---	8,151	---	7,8,045
Sheep	---	6/1,958	---	2,115	---	2,015	---	7/1,930	---	7/1,792
Horses	---	6/635	---	560	---	447	---	7/403	---	7/369

<sup>1/</sup> USDA estimates, except for area and livestock numbers.

<sup>2/</sup> USDA preliminary estimates.

<sup>3/</sup> Liveweight basis.

<sup>4/</sup> Cow milk only.

<sup>5/</sup> End of previous year.

<sup>6/</sup> Based on  $\frac{1}{4}$  years only.

<sup>7/</sup> November 30 of previous year.

per hectare of sown area were delivered to East German agriculture in 1961/62. A substantial increase occurred between 1950 and 1961, but deliveries fell off in 1962, except for a slight increase in nitrogen.

The reported availability of fertilizer and machinery in East German agriculture undoubtedly accounts for the generally higher crop yields per hectare compared with the rest of Eastern Europe. Fertilizer and tractors have not, however, been able to stem the decline in total agricultural output. The close correlation between the completion of collectivization in 1959/60 and the declines in agricultural production suggests that problems associated with collectivization have been at the heart of East Germany's agricultural difficulties in the past 3 years. Of these, the most important are poor management, inadequate labor supplies--due to the flight of farmers from the land, lack of good agricultural managers, and the low producer incentives.

### Policy

Despite declines in output and the flight from the land of many workers and skilled managers, there has been no significant change in the East German agricultural policy of completely socializing agriculture (table 31). At present there are state farms, three types of collective farms, and the small private plots allotted to farm workers. Changes in agricultural policy have been within this general framework. Amalgamation of smaller farms into larger ones and conversion of the loosely collectivized Type I collective farms into the more tightly collectivized Type II and Type III collective farms has been underway since 1960.

Type I collectives require collective management and working of the cultivated areas of the original members. Orchards, livestock, and other specialized operations may be carried on individually. The Type III collective farms are the most collectivized; in addition to crop land, other specialized operations, livestock, farm machinery, buildings, and forest land are also collectivized. Within the Type II collective farm--the intermediary form--a wide variety of conditions prevail depending upon whether the farm has just been formed from a Type I collective or is about ready for conversion to a Type III collective.

A major difficulty in this transition has been the collectivization of livestock and assets other than cropland. Rather than relinquish private livestock, farmers have slaughtered their stock and paid little attention to collective herds. In the new Type II collectives much greater emphasis is placed on collective production, especially of livestock, bringing the Type II closer to a Type III collective.

The transfer of machinery from the Machine Tractor Stations to collective farms was initiated during 1963. Tractor drivers have apparently raised a number of objections because they see in the change a lowering of their wages and status. Numerous speeches by East German officials have been published to dispel the fears of the tractor drivers. However, the fears are probably valid. Machinery owned by collective farms could serve as a further inducement to collectivized production.

In addition to organizational changes, a number of changes in State purchase prices for agricultural products have also occurred. Some prices, particularly for livestock products were increased in 1962. Beginning in 1964, uniform prices for most field crops will prevail throughout East Germany. These prices are higher than the former procurement prices but below the prices paid by the State for above-plan deliveries, both of which are to be eliminated. Also to be eliminated are price distinctions among regions. Premiums for above-plan deliveries will be given in 1964 for livestock products. These, however, are higher for the northern bezirks--where production costs are said to be greater--than other regions of the country. At the same time closer scrutiny of costs of production is to be undertaken and penalties for failure to attain goals or for disrupting socialized production are to be implemented. These measures are designed to stimulate production, reduce the costs to the State, and place agriculture on a cost accounting basis.

#### Food situation

According to East German statistics, per capita consumption of most major food items fell off in 1961 and even more in 1962. The only major items showing increases were cereals and vegetable oils; supplies of these are augmented by substantial imports. The consumption of butter, meat, eggs, milk and other higher quality items declined.

The food situation in East Germany in 1963 appeared to be somewhat improved over 1962. Although no major improvements in production took place in either year, output in both was better than in 1961. The supply of such basic commodities as potatoes, although smaller than in 1960, was substantially improved over 1961. The supply of vegetables was reported to be much above 1961. Meat production, which increased due to excessive slaughter in 1961/62 and fell due to depleted herds in 1962/63, is probably increasing.

The first year since World War II the population of East Germany did not decline was 1962. Declines until 1962 in agricultural production were partly offset by population declines. If the population continues to increase, East Germany will face the problem of increasing agricultural output or adding to its already large imports of food products to maintain present levels of consumption.

#### Foreign trade

To a considerable extent, East Germany's level of food consumption is the result of heavy imports of foodstuffs (table 14). At one time the area now known as East Germany was a major grain exporter, but today its grain imports average 2 million to  $2\frac{1}{2}$  million metric tons annually, of which almost half is wheat. East Germany's food and beverage imports constitute from 27 to 30 percent of total imports. Most of these are from Bloc countries, especially the Soviet Union. Over the past few years about 95 percent of grain imports, 40 percent of meat imports, and 75 percent of butter imports were from the Soviet Union. None of these commodities is in plentiful supply in the Soviet Union.

Table 14.--East Germany: Principal agricultural imports, annually 1955-62 1/

Commodity	1955	1956	1957	1958	1959	1960	1961	1962
Meat and meat products . . . . .	88.9	95.5	114.2	63.1	193.1	104.0	107.5	202.2
Animal fats, refined and unrefined . . . . .	19.8	23.1	13.4	3.0	9.5	5.9	2.5	10.4
Butter . . . . .	15.0	30.0	36.7	22.0	69.4	44.4	51.2	55.7
Cheese . . . . .	11.0	9.8	16.3	11.5	14.5	20.2	21.2	18.2
Eggs and egg products 2/ . . . . .	200.3	186.9	294.1	101.0	117.0	57.0	20.8	55.3
Wheat . . . . .	555.0	606.0	1,078.0	1,292.0	1,335.0	1,520.0	1,250.0	1,238.0
Rice . . . . .	77.9	53.7	62.7	59.3	114.8	142.8	30.3	30.4
Coarse grains . . . . .	798.1	1,100.3	945.6	580.9	514.8	572.5	681.2	1,008.6
Fruit, fresh and tropical . . . . .	148.0	141.7	123.4	166.7	232.5	185.4	212.5	211.1
Fruit, canned and juices . . . . .	8.2	8.6	10.4	13.0	31.5	41.9	39.6	31.2
Coffee, raw cocoa, and tea . . . . .	13.6	15.6	19.6	27.7	39.3	36.9	42.1	44.8
Potatoes . . . . .	28.4	43.7	20.9	31.2	44.0	54.7	90.4	129.1
Vegetables, fresh . . . . .	55.8	52.1	57.9	76.3	94.4	115.6	102.9	94.6
Vegetables, canned . . . . .	28.3	15.1	17.8	19.5	16.6	28.6	27.9	24.6
Wine and champagne 3/ . . . . .	235.9	217.4	311.0	373.6	388.5	531.1	519.2	647.1
Spirits 3/ . . . . .	5.0	5.5	3.1	3.1	2.5	7.7	8.9	13.0
Beer 3/ . . . . .	144.6	140.4	130.6	129.0	128.3	88.8	78.3	22.9
Tobacco, smoking and cured . . . . .	21.8	26.0	28.8	26.3	28.0	25.5	22.4	24.2
Vegetable oils, raw and refined . . . . .	61.3	85.0	71.5	84.8	86.6	109.7	121.5	148.8
Oilseeds . . . . .	265.0	269.1	320.0	314.3	268.1	282.5	126.6	108.2
Wool, washed . . . . .	8.6	8.3	11.1	12.5	16.5	19.4	23.0	21.2
Cotton . . . . .	91.9	91.2	91.6	87.9	103.3	107.7	92.5	123.6
Hides, skins, raw 4/ . . . . .	11.3	13.1	14.6	17.2	22.2	20.0	22.5	24.3

1/ Source: Statistisches Jahrbuch Der Deutschen Demokratischen Republik, 1963.

2/ Millions.

3/ 1,000 hectoliters (264.18 U.S. gallons).

4/ Salt weight.

Agricultural exports of East Germany are difficult to estimate with accuracy. According to the East German statistical handbook, the only agricultural export of significance is sugar. During the period 1958-62 exports of sugar (raw and refined) ranged from 168,000 to 370,000 metric tons annually. East German statistics, however, do not detail the substantial agricultural trade with West Germany and West Berlin.

In 1962, according to the U.S. Department of Commerce, the value of East German exports of selected agricultural products to West Germany, West Berlin and the rest of the free world was as follows:

Commodity	: West Berlin : : and : Other : West Germany : free world
	:
	: 1,000 U.S. dollars
Meat and meat products.....	6,950 7,325
Wheat.....	--- 2,880
Corn.....	1,622 1,622
Rye.....	5,575 5,575
Sugar and sugar preparations.....	9,944 12,360
	:

Because exports of agricultural products are not clearly indicated in East German statistics, it is impossible to ascertain the value or quantity of these exports to Bloc countries. According to East German figures, 80 percent of the value of total foreign trade was with Bloc countries, about 8 percent with West Germany and West Berlin, and about 12 percent with the rest of the free world in 1962.

It would appear from the substantial quantities of high-value food items imported by East Germany that the Government feels it must satisfy at least some of the demands of the population for these items despite the stringency of foreign exchange. The large share of imports accounted for by food is constantly stressed by East German officials and great emphasis is placed on reducing this share. But little progress has been made.

In this connection it should be borne in mind that East Germany is an industrial country whose agriculture supplies a relatively modest share of the total national product--about 10 percent. Its foreign trade, therefore, exhibits many characteristics of other industrial countries. Exports are dominated by manufactured products and imports by agricultural products and other raw materials. However, the official policy until recently was one of agricultural self-sufficiency. But some Communist officials have begun to recognize that the solution lies in increasing East German exports of industrial and manufactured products so that food imports can be more easily secured.

## CZECHOSLOVAKIA

### Production

Despite relatively favorable weather and notable gains in the output of some commodities, the planned 6-7 percent increase in agricultural production was not achieved in 1963. A decline in livestock numbers and the output of livestock products, as well as smaller crops of rape and feedgrains were the immediate causes of failure in meeting the 1963 production plan.

Crop production in Czechoslovakia showed some improvement in 1963 over that of the preceding 2 years (table 1). The grain crop was slightly above that of 1961 and 1962. Largest individual gains were recorded in wheat production, which was 6 percent higher than in 1962, and in the corn crop which reportedly increased 30 percent (table 15). These increases were largely due to expanded acreages and relatively favorable weather during the growing season. Between April and September precipitation was near normal in most areas, though in some isolated areas precipitation was as much as 50 percent below normal.

Potatoes did very well in 1963, showing an increase of approximately one-fourth over the preceding year. The output of sugar beets in 1963, according to Czechoslovakian estimates, was the second highest since World War II, exceeding production in 1962 by 25 percent. The sugar content, however, was expected to be lower. Vegetables showed improvement over the 1962 crop, while fruit production was down, largely due to extensive frost damage to orchards.

Livestock numbers declined during 1963, especially those of cattle and hogs. Shortages of feed and poor pasture conditions resulted in large-scale slaughter during the last quarter of 1962 and the first quarter of 1963. According to the 1963 midyear census, the number of cattle and hogs were 3 and 5 percent lower respectively than a year earlier.

Meat production in 1963/64 is expected to be down about 10 percent, largely due to the smaller number of livestock available for slaughter and the Government's efforts to replenish depleted herds. The output of dairy products is expected to be reduced, creating shortages of milk, butter, and other products.

Despite attempts by the Government to enlarge the area of arable land, it has continued to decline. Large areas are being left out of cultivation. According to official sources, the area of agricultural land has decreased 118,000 hectares since 1959. The farm labor force also continued to decline in 1963. Between 1955 and 1963 the number of people engaged in agriculture dropped by one-third.

The 1964 agricultural plans call for expanding the cultivated land to increase the area of wheat, technical, and feed crops. The overall plan for 1964 calls for a 6 to 6.5 percent increase in agricultural output.

### Agricultural inputs

With the recent consolidation of small collective farms into larger production units, farm mechanization is one of the prime objectives of

Table 15.--Czechoslovakia: Area and production of principal crops, output of animal products, and number of livestock, average 1955-59, annual 1960-63 <sup>1/</sup>

Item	1955-59 average			1960			1961			1962			1963 <sup>2/</sup>		
	Area	Production	Area	Production	Area	Production	Area	Production	Area	Production	Area	Production	Area	Production	Area
	hectares	metric tons	hectares	metric tons	hectares	metric tons	hectares	metric tons	hectares	metric tons	hectares	metric tons	hectares	metric tons	hectares
Field crops:															
Wheat	729	1,507	652	1,503	643	1,666	685	1,644	688	1,740	420	874			
Rye	504	974	431	895	463	994	441	916	420	874					
Barley	664	1,345	707	1,745	696	1,581	692	1,752	656	1,660					
Oats	523	941	504	1,020	465	959	450	905	437	880					
Corn <sup>3/</sup>	176	443	195	572	201	461	201	471	216	616					
Potatoes	614	7,844	569	5,093	515	5,331	508	5,022	502	6,392					
Sugar beets (factory)	228	5,881	242	8,368	252	6,894	254	5,811	250	7,264					
Rapeseed	37	50	39	55	55	84	34	48	45	42					
Livestock:															
Products:															
Red meat <sup>4/</sup>	—	—	864	—	—	930	—	—	962	—	1,092	—	994	—	—
Milk	—	—	3,699	—	—	3,826	—	—	3,942	—	3,673	—	3,584	—	—
Eggs	—	—	—	—	Million units	Million units	Million units	Million units	—	—	Million units	—	Million units	—	—
Number: <sup>5/</sup>					1,979	2,267	2,351	2,325	—	—	2,315	—	2,315	—	—
Cattle	—	—	—	—	1,000 head	—	1,000 head	—	—	—	1,000 head	—	1,000 head	—	—
Hogs	—	—	4,181	—	—	4,383	—	—	4,489	—	4,642	—	4,520	—	—
Sheep	—	—	5,216	—	—	5,811	—	—	5,918	—	5,973	—	5,700	—	—
Horses	—	—	1,201	—	—	961	—	—	825	—	705	—	590	—	—
	—	—	515	—	—	360	—	—	313	—	268	—	228	—	—

<sup>1/</sup> Official Czechoslovakian data unless otherwise indicated: Statisticka Rocenka CSSR, 1962.

<sup>2/</sup> USDA estimates except for cattle and hogs.

<sup>3/</sup> Corn for grain.

<sup>4/</sup> Liveweight basis.

<sup>5/</sup> As of July 1.

agricultural policy. At the end of 1963 there were 146,555 tractors (in 15 horsepower units) available to agriculture, a ratio of 35 hectares of arable land per tractor unit compared with 94,297 tractors and a ratio of 54 hectares of arable land per tractor unit in 1960 (table 30). This improvement in the land-tractor ratio, however, has not been reflected in performance.

As often reported in the Czechoslovakian press, agricultural equipment is not fully utilized. Poor maintenance and the shortage of spare parts are chronic; they offset to a large extent the steady increase in the number of tractors. Mineral fertilizer production has been slow to increase, but new plants are being constructed and better utilization of existing capacity is planned. During 1963 the quantity of mineral fertilizer available per hectare of arable land amounted to 84 kilograms of plant nutrients compared with 68 in 1960. Long-range plans call for the average application of 200 kilograms of plant nutrients per hectare by 1970.

### Policy

The Government in 1963 continued its drive to consolidate collective farms into larger units. During the last 5 years the number of collective farms has been drastically reduced. In 1959 there were 12,560 collective farms with an average of 354 hectares of agricultural land. By early 1963 the number had been reduced to approximately 4,500 of which more than half were the consolidated type with an average of more than 700 hectares of agricultural land. State farms also have been undergoing consolidation, but at a much slower rate. In 1963 there were 359 state farms with an average of 3,552 hectares of agricultural land. As of January 1962 the socialist sector (collective and state farms) held 83 percent of all agricultural land and 87 percent of the arable land (table 31). Thus, only a small portion of the agricultural land remains in private ownership--small garden plots of members of collective farms and small individual farms. As stated by Jiri Hendrych, Secretary of the Central Committee, "The process of socializing agriculture has more or less been completed and state and collective farms are absolutely decisive in agriculture."

In addition to the continuing consolidation of state and collective farms, a second major government effort in 1963 was the reorganization of agricultural administration. Until 1963, district committees were responsible for overseeing agricultural production. Because of other duties, however, their role in farm management was limited.

Responsibility for agricultural production was assigned in April 1963 to a newly created Agricultural Production Administration (APA), directly responsible to the Ministry of Agriculture. The initial task of the APA was to prepare annual production and procurement plans for each district and region, subject to approval of the respective district and regional committees and the Ministry of Agriculture. The principal responsibility of the new administration is to ensure that production and procurement plans are met. Other responsibilities include better land utilization and consolidation of the remaining small collectives.

Another important change in agricultural policy during 1963 was in regard to compulsory deliveries from small landholders and the private plots of

collective farmers. Under the new regulation small landholders with less than 0.3 hectares are released from obligatory deliveries. Deliveries from landholders with 0.3 to 0.5 hectares will be based on agreements between the producer and the local procurement organization. After fulfillment of obligatory delivery quotas, any remaining fruit and vegetables may be sold to consumers at prices not to exceed state retail prices. Each household may slaughter one of its own hogs without restrictions. A second hog may be slaughtered only when the collective farm has fulfilled its pork procurement goal. Five kilograms of fat must be delivered to the State from the second hog slaughtered.

For collective farmers, marketable surpluses must be first offered to the state procurement organization. Produce not purchased by the State may be sold directly to the consumer.

#### Food situation

Czechoslovakia, an industrial country and a traditional importer of food, will continue to rely heavily on imports of foodstuffs during 1963/64. Although somewhat better than in 1962/63, the food situation will continue to be tight. Meat shortages were felt during the last part of 1962/63 and became more acute in the early part of 1963/64. This situation is not expected to improve before spring. Since July 1963, one meatless day per week has been observed by all catering establishments in an attempt to alleviate meat shortages for private consumers.

Shortages of milk are expected to continue. Farmers have not met milk delivery quotas for many years. The supply of other dairy products also will be limited. Animal fats and vegetable oils are expected to be in short supply during 1963/64, because of the reduced slaughter and losses of rape--the most important oilseed crop--during the winter of 1962/63.

Potatoes and vegetables are expected to be in good supply. Less fruit will be available than during the preceding year.

Although grains fared better in 1963 than during the 2 previous years, large imports will be required to cover increased consumption needs. Some consumer price increases, as introduced on beer in October 1963, may be expected on other foods.

Per capita consumption in Czechoslovakia has been steadily rising during the past few years. Domestic agricultural production, however, has not been able to approach consumption requirements, but agricultural self-sufficiency is not a national policy objective. Large imports of breadgrains, meat, animal fats, and vegetable oils are expected to continue through 1963/64 and for years to come.

#### Foreign trade

Czechoslovakian foreign trade is characterized by large imports of a variety of agricultural commodities (table 16). The major source of supply is normally the Soviet Union, which accounts for nearly 40 percent of total Czech foreign trade. Czech grain imports average nearly 2 million metric tons

Table 16.--Czechoslovakia: Principal agricultural imports, annually, 1955-61 1/

Commodity	: 1955	: 1956	: 1957	: 1958	: 1959	: 1960	: 1961
Meat and meat products 2/.....:	77	70	63	99	121	106	89
Butter .....	18	6	11	9	15	14	17
Eggs 3/ .....	60	63	36	58	54	70	74
Wheat .....	816	835	975	965	1,141	1,486	1,127
Rice .....	40	58	120	142	136	135	85
Coarse grains .....	712	810	717	450	740	976	566
Fruits .....	133	102	114	119	152	111	144
Vegetables .....	46	57	110	63	83	113	106
Hops 4/ .....	171	395	459	225	5/	731	235
Nuts .....	5/	5	6	8	7	7	7
Coffee, raw cocoa, and tea ..:	14	22	18	16	20	22	30
Wine 6/ .....	5/	187	335	381	367	461	409
Tobacco .....	10	14	14	16	14	18	20
Oilseeds .....	148	117	126	109	129	109	122
Cotton .....	71	84	84	91	105	103	122
Jute .....	11	11	11	14	13	14	17
:							

1/ Source: Statisticka Rocenka CSSR, 1962. 2/ Including animals for slaughter in slaughter weight equivalent. 3/ Millions. 4/ Tons. 5/ Not available. 6/ In 1,000 hectoliters.

Table 17.--Czechoslovakia: Principal agricultural exports, annually, 1955-61 1/

Commodity	: 1955	: 1956	: 1957	: 1958	: 1959	: 1960	: 1961
Eggs 2/.....:	-	31	71	101	111	101	154
Coarse grains 3/ .....	175	190	204	242	286	257	249
Hops .....	2.6	4.6	2.9	2.5	4.1	3.8	4.3
Sugar .....	233	143	208	369	361	293	662
Beer 4/ .....	5/	231	247	370	445	421	468
:							

1/ Source: Statisticka Rocenka CSSR, 1962.

2/ Millions.

3/ Includes malt in terms of barley.

4/ In 1,000 hectoliters.

5/ Not available.

annually. More than half of these imports normally come from the Soviet Union, the rest primarily from other Bloc countries. Oilseeds are also a major import, averaging nearly 100,000 metric tons annually. These imports consist of sunflower seed from the USSR, peanuts from Great Britain and Mali, and soybeans from the United States. Meat imports--averaging about 100,000 metric tons annually--come mostly from the Bloc countries, especially the Soviet Union. In addition to meat, grains, and oilseeds, Czechoslovakia imports butter, eggs, fruits, vegetables, cotton, and limited quantities of tropical commodities.

Until recently, most of Czechoslovakia's agricultural trade was with the Bloc. However, with Communist Chinese trade (which accounted for 45 percent of total meat imports, 43 percent of vegetable oil, and 79 percent of rice imports in 1960) practically eliminated, Czechoslovakia has turned to other countries for its agricultural raw materials. A wheat agreement was concluded with Canada in October 1963 for the delivery of 1.2 million tons of wheat during the next 5 years. Czechoslovakia also has a long-term wheat agreement with the USSR and is expecting to import 1.15 million metric tons of Soviet grain during 1963/64. Nearly half of Czechoslovakian cotton imports are from the Soviet Union, although Egypt supplies a large share.

Agricultural commodities account for 18 percent of total Czech imports and 6 percent of total exports. Among the major export commodities are sugar, malt, beer, eggs, and hops (table 17). The trade outlook for 1963/64 is dimmed by the prospect of greater pressure on foreign exchange reserves and increased problems in the trade balance. Increased exports of high quality goods, as well as some reduction of nonessential imports, may be expected.

#### HUNGARY

##### Production

Hungarian net agricultural output in 1963/64 dropped about 3 percent below the 1962/63 level (table 1). The decline was primarily a result of winter damage to wheat and barley and the sharp reduction in hog numbers during 1962/63.

The wheat and barley harvests were more than 20 percent below the previous year. Wheat production was the second lowest since the postwar recovery years of the late 1940's (table 18). Although corn production increased, total feedgrain production was below 1962. Production of most industrial crops increased in 1963 due to improved yields. The sugar beet crop was at a record high. Production of vegetables exceeded the poor outturn of 1962 due in part to a 10 percent increase in area. Pear, plum and peach crops were smaller in 1963 than in 1962 but the important apple and apricot crops were larger. Inadequate and inefficient marketing facilities, especially transportation, resulted in above-normal spoilage losses of fruits and vegetables.

The output of livestock products in 1963/64 is estimated to have decreased from the previous year. Although the production of beef, veal, and poultry meat increased somewhat, it did not offset declines in the output of dairy products, eggs, and pork. At the beginning of the 1963/64 crop year, hog numbers were 15 percent below the 1958/62 average and at a 10-year low.

Table 18.--Hungary: Area and production of principal crops, output of animal products, and number of livestock, average 1955-59,  
annual 1960-63 1/

Item	1955-59 average		1960		1961		1962		1963 2/	
	Area	Production	Area	Production	Area	Production	Area	Production	Area	Production
	1,000 hectares	1,000 metric tons	1,000 hectares	1,000 metric tons	1,000 hectares	1,000 metric tons	1,000 hectares	1,000 metric tons	1,000 hectares	1,000 metric tons
Field crops:										
Wheat . . . . .	1,260	1,866	1,051	1,768	1,014	1,936	1,095	1,959	978	1,530
Rye . . . . .	408	468	301	354	268	297	232	233	209	210
Barley . . . . .	474	846	508	986	522	984	548	1,144	487	870
Oats . . . . .	141	212	141	203	110	139	84	115	90	106
Corn . . . . .	1,292	2,914	1,401	3,505	1,340	2,715	1,288	3,241	1,301	3,300
Potatoes . . . . .	232	2,438	253	2,656	240	1,630	209	1,882	232	2,300
Sugar beets . . . . .	109	2,163	133	3,370	130	2,355	125	2,654	118	3,400
Sunflower seed . . . . .	114	129	69	68	128	105	124	132	121	135
Livestock:										
Products:										
Meat 3/ . . . . .	---	483	---	552	---	578	---	640	---	600
Milk . . . . .	---	1,751	---	1,955	---	1,897	---	1,805	---	1,750
Eggs . . . . .	---	---	---	---	Million units 1,600	Million units 1,848	Million units 1,900	Million units 1,835	---	Million units 1,800
Number: 4/ . . . . .	---	---	1,000 head	1,000 head	1,000 head	1,000 head	1,000 head	1,000 head	1,000 head	1,000 head
Cattle . . . . .	---	2,042	---	1,971	---	1,957	---	1,987	---	1,906
Hogs . . . . .	---	5,687	---	5,356	---	5,921	---	6,409	---	5,428
Sheep . . . . .	---	1,973	---	2,381	---	2,643	---	2,850	---	3,043
Horses . . . . .	---	720	---	628	---	463	---	374	---	339

1/ Official Hungarian date unless otherwise indicated: Mezogazdasagyi Statisztikai Zsebkonyv, 1963, and Statistikai Havi Kozlemenyek, No. 11, 1963.

2/ USDA preliminary estimates.

3/ Carcass weight.

4/ March of year shown.

## Agricultural inputs

Capital inputs in agriculture continue to increase steadily while those of land and labor decline. The agricultural labor force continued to decline in 1963 and the average age of agricultural workers exceeded 50 years. The arable area decreased about 0.5 percent in 1963--a continuation of the trend since 1953. The fairly rapid increase in the number of tractors and use of fertilizer continued in 1963. The quantity of fertilizer supplied to agriculture in 1963 increased more than 5 percent and was equivalent to about 58 kilograms of plant nutrients per hectare of sown land (table 30). Tractor numbers increased more than 10 percent in 1963, resulting in a tractor density of about one 15 hp. tractor unit per 75 hectares. State investments in agriculture, which have been increasing since the re-initiation of collectivization in 1958, exceeded the plan in 1963 and amounted to about 20 percent of total state investments. More than half of the state investments were in the form of credits to collectives. Loans to collectives in 1963 exceeded those in 1962 by almost 30 percent. Part of this increase was absorbed by inflation, especially by increases in machinery prices.

Hungarian authorities have estimated that about 50 percent of the farmwork is now mechanized. Complete mechanization would mean more than doubling the machinery investments of collective farms. This would result in an annual repayment obligation per hectare greater than returns per hectare on 40 percent of the collectives in 1963, according to Hungarian sources.

## Policy

There were no major changes in agrarian policy in 1963 with the continuation of the policy of some liberalization within the framework of collectivization.<sup>9/</sup> With the consolidation phase of collectivization well underway, the major emphasis now is on streamlining the administrative structure of agriculture and increasing production.

The 1964 plan calls for an increase of 4 to 5 percent in agricultural output. This is much more realistic than the targets set in the preceding 2 years. The original 1965 agricultural plan was officially abandoned in late 1963. In reality, however, it was abandoned a year earlier. This does not indicate a de-emphasis of agriculture but a more realistic approach to planning. Agricultural development has been singled out by Hungarian officials as the key to economic development in the coming years, and the proportion of state investments in agriculture and the chemical industry is to increase again in 1964.

Shifts in land utilization favoring wheat and industrial crops were called for in the 1964 plan. The area sown to breadgrains in the fall of 1963 for the 1964 harvest reportedly increased more than 16 percent. Larger areas are also planned for sugar beets (10 to 15 percent), tobacco, paprika, hemp, and broomcorn in 1964 while the areas of sunflower and vegetables are to remain the same

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<sup>9/</sup> The policy of limited liberalization is discussed in The 1963 Eastern Europe Agricultural Situation, U.S. Dept. Agr. April 1963.

Table 19.--Hungary: Principal agricultural imports, annually, 1955-62 1/

Commodity	1955	1956	1957	1958	1959	1960	1961	1962
:-----  1,000 metric tons  -----:								
Meat .....	4.4	9.1	8.2	3.0	10.5	24.9	18.9	20.3
Wheat and wheat flour ....	478.3	343.3	350.0	100.5	260.0	314.4	448.0	225.4
Rice, milled .....	16.9	24.7	29.4	15.4	29.6	17.6	21.1	17.4
Coarse grains .....	107.2	22.9	319.2	91.6	57.5	41.5	184.5	483.7
Fruit, citrus .....	3.8	2.9	11.4	15.1	19.7	18.8	18.6	32.2
Sugar, refined .....	87.4	2/53.5	32.7	47.3	10.0	27.7	80.8	109.0
Coffee .....	2.7	2.6	2.1	1.4	5.8	3.3	3.3	5.5
Cocoa beans .....	1.8	2.8	9.3	2.1	3.5	4.1	3.3	6.3
Tobacco .....	7.9	4.9	4.4	4.4	3.2	3.3	7.5	6.5
Hides and skins .....	19.8	9.2	12.9	17.4	19.1	18.6	21.1	19.1
Cotton .....	47.7	40.0	40.2	52.5	51.9	62.3	68.0	65.1
Wool, clean .....	3.5	2.5	2.6	4.1	4.5	5.7	4.3	3.8
Jute .....	7.5	6.4	5.9	7.4	7.0	8.2	6.4	9.3
Fats and lard .....	9.7	3.1	10.7	0	1.6	11.1	19.4	12.1
Tallow .....	15.4	10.8	13.7	5.2	5.9	7.9	7.7	7.1
:-----:								

1/ Source: Statistikai Evkonyv, 1957, 1961, and 1962.

2/ Both raw and refined in unspecified quantities.

Table 20.--Hungary: Principal agricultural exports, annually, 1955-62 1/

Commodity	1955	1956	1957	1958	1959	1960	1961	1962
:-----  1,000 metric tons  -----:								
Cattle, for slaughter 2/	33.8	62.0	75.0	91.2	92.7	123.4	92.4	97.2
Pigs, for slaughter 2/	179.0	226.9	98.6	140.9	135.3	104.9	77.8	155.2
Meat .....	22.5	17.7	10.4	12.8	19.8	22.9	21.7	40.7
Poultry, for slaughter ...	17.3	11.6	12.2	13.8	16.0	15.2	20.7	26.4
Eggs, fresh 3/ .....	184.4	170.1	99.8	148.4	163.3	117.5	135.1	60.0
Butter .....	3.8	5.0	3.8	7.1	4.9	5.7	4.0	4.7
Cheese .....	3.0	2.7	3.2	4.1	5.5	5.9	7.7	7.5
Wheat and wheat flour ...	304.9	145.3	8.1	72.1	66.7	68.1	120.2	47.8
Corn .....	117.7	114.7	17.4	43.0	46.2	37.6	53.5	34.2
Fruit, fresh .....	64.0	55.3	85.0	68.5	116.7	55.8	146.7	113.0
Beans .....	24.7	21.0	14.2	21.7	10.9	10.3	2.7	4.7
Peas .....	5.1	7.4	12.6	11.7	17.4	28.1	27.3	31.4
Onions .....	20.1	9.6	18.2	14.7	29.1	24.6	10.4	23.4
Potatoes .....	17.7	22.8	36.5	49.2	38.0	65.5	69.8	24.3
Vegetables, fresh .....	4/	4/	4/	61.3	103.4	92.1	71.7	98.6
Sugar, refined .....	95.6	5/40.0	5/9.9	27.9	62.6	135.4	177.0	214.8
Wine 6/ .....	236.2	253.6	213.2	356.0	529.9	508.5	410.8	335.2
Vegetable oils .....	28.3	15.7	18.7	20.4	21.9	20.6	14.5	22.8
Fats and lard .....	4.6	2.4	3.7	13.0	13.7	6.6	10.5	9.4
:-----:								

1/ Source: Statistikai Evkonyv, 1957, 1961, and 1962.

2/ 1,000 head.

3/ Millions.

4/ Not available.

5/ Both raw and refined in unspecified quantities.

6/ Thousand hectoliters.

as 1963. In animal husbandry, top priority is assigned to increasing the number of collectively owned cattle. The stress on sugar beets and cattle no doubt results from the expectation of continued good markets outside the Bloc.

#### Food situation

Although there was an improvement in food supplies over the previous year, they still lagged behind increased demand. While the supply of fruits and vegetables was better than during 1962/63, animal products were in shorter supply. By the fall of 1963, food prices were below the abnormally high levels of a year earlier.

Deficits in the wheat supply were offset by record net imports, principally from the West. The availability of potatoes and onions was greater than in the previous year. Difficulties were encountered in the supplies of pulses, meat, butter, and eggs.

#### Foreign trade

Agricultural trade in Hungary is characterized by imports of wheat and raw materials for industry, and exports of livestock for slaughter, fruit, vegetables and, to an increasing extent since 1960, sugar (tables 19 and 20). This pattern was continued in 1963 though on a larger scale because of increased exports to Western Europe. A substantial increase in food exports in 1963 reportedly offset shortfalls in nonagricultural exports.

Large import requirements of grain, due principally to the short wheat crop, were announced in the fall of 1963. Hungarian officials indicated at that time that grain imports in late 1963 and early 1964 would total about 800,000 tons valued at about \$45 million. About one-half of the grain was to be bought from the United States and one-half in Western Europe, indicating that grain imports from the USSR, which averaged 300,000 tons annually between 1960 and 1962, were small or nil. The export availability of sugar, fruit, vegetables, and vegetable oil in 1963/64 was above the previous year. Increased exports of livestock for slaughter are not expected due to the reduction of livestock herds.

### RUMANIA

#### Production

Agricultural production in Rumania in 1963/64 showed definite improvement over the previous year. Agricultural output, after a decline in 1962/63, returned to the level that persisted from 1959/60 through 1961/62 (table 1). Weather conditions were relatively favorable until July. But dry and abnormally hot weather from July through September, especially in northwestern Rumania, reduced yields of late spring crops.

Disturbed by the decline in corn acreage and production in 1962, agricultural officials decreed and effected an increase in corn acreage in 1963. The increase of 350,000 hectares of corn for grain was offset by a corresponding decrease in the area under wheat and corn for silage in 1963

Table 21.--Romania: Areas and production of principal crops, output of animal products, and number of livestock, average 1955-59,  
annual 1960-63 <sup>1/</sup> and 1963 <sup>2/</sup>

Item	1955-59 average			1960			1961			1962			1963		
	Area	Production	Area	Production	Area	Production	Area	Production	Area	Production	Area	Production	Area	Production	Area
	hectares	metric tons	hectares	metric tons	hectares	metric tons	hectares	metric tons	hectares	metric tons	hectares	metric tons	hectares	metric tons	hectares
Field crops:															
Wheat	2,954	3,212	2,836	3,450	2,969	3,990	3,043	4,054	2,874	3,800	3,043	4,054	2,874	3,800	3,043
Rye	158	151	98	103	90	104	77	78	78	70	75	75	78	78	75
Barley	315	381	266	405	284	468	251	419	223	440	244	419	223	440	244
Oats	338	327	270	284	244	244	275	280	280	220	275	280	280	280	220
Corn	3,551	5,097	3,572	5,531	3,428	2/5,500	3,107	4,932	3,458	5,700	3,107	4,932	3,458	5,700	3,107
Potatoes	265	2,803	292	3,009	293	2,875	299	2,597	318	2,700	299	2,597	318	2,700	299
Sugar beets	152	2,148	200	3,399	172	2,911	155	2,180	177	2,400	172	2,180	177	2,400	172
Sunflower seed	348	314	430	522	440	481	429	450	450	500	440	481	429	450	500
Livestock:															
Products:															
Milk, cows	---	1,908	---	2,431	---	2,627	---	2,580	---	---	2,550	---	2,550	---	2,550
Number: <sup>3/</sup>															
Cattle	4,579	4,095	4,579	4,450	4,579	4,530	4,530	4,707	4,707	4,707	4,707	4,707	4,707	4,707	4,707
Hogs	10,908	10,908	10,908	11,200	10,908	11,500	11,500	12,285	12,285	12,285	12,285	12,285	12,285	12,285	12,285
Sheep	1,200	1,200	1,200	1,110	1,200	1,000	1,000	1,013	1,013	1,013	1,013	1,013	1,013	1,013	1,013
Horses	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

<sup>1/</sup> Official Romanian sources unless otherwise indicated: *Anuarul Statistic Al R.P.R., 1963; Buletin Statistic Trimestrial*, No. 3, 1963.

<sup>2/</sup> USDA preliminary estimates.

<sup>3/</sup> January.

<sup>4/</sup> Not available.

*Anuarul Statistic Al R.P.R., 1963; Buletin Statistic Trimestrial*, No. 3,

(table 21). Most of the increase in the corn area was on state farms where yields are considerably higher than on collective farms. State farms accounted for 14 percent of the acreage of corn for grain in 1963 compared with 8 or 9 percent in previous years. The decrease in wheat and corn for silage on state farms, which are harvested mechanically, and the increase in area of corn for grain, which is largely harvested by hand, no doubt created some problems on state farms which do not have the surplus labor that exists on collective farms.

Along with corn, the areas planted to sugar beets, sunflowers and potatoes were increased in 1963. Production of all these crops in 1962 was well below the 1959-61 average and even more below plan. It apparently became evident to the regime that the planned increase in production of these important crops could not be readily accomplished solely through higher yields.

The output of most major crops was greater than in 1962 (table 21). Wheat was the principal exception, due to a 5 percent decrease in area. The important corn crop is estimated to have been about 800,000 tons above the previous year with the increase in area offsetting the effects of the late drought. The output of livestock products is estimated to have remained about the same as during the previous year.

The fruit crop suffered from the hot, dry weather and frost damage which was especially severe on peach, apricot, cherry, and pear trees. As a result, the production of orchard fruits was no greater and possibly less than the below-average outturn of 1962. Grape production is estimated to have been less than the good 1962 crop. Vegetable production, on the other hand, appears to have increased.

#### Agricultural inputs

During the last 3 years agriculture received an average of 20 percent of total investments and 16 percent of government investments in the national economy, compared with 12 percent of each during 1955-57. A substantial increase in the availability of machinery and fertilizer resulted. However, averages of 115 arable hectares per 15 hp. tractor unit and 15 kilograms of plant nutrients per arable hectare are still low (table 30). The situation on state farms is much better with an average of 55 hectares per 15 hp. tractor unit and about 50 kilograms of plant nutrients per hectare. In practice, mineral and organic fertilizers are applied to only 15 and 20 percent respectively of the arable area. The average application rate for the area on which mineral fertilizer is actually applied is about 60 kilograms of plant nutrients per hectare, about three-fourths of which is phosphatic.

The use of improved seeds, especially of wheat, corn, and sunflowers, is increasing. Currently about 60 percent of the wheat area is sown to improved Soviet, Italian, and French varieties. About 40 percent of the corn area is planted with hybrid seed.

#### Policy

The trend of a higher investment priority for agriculture, which was initiated in 1958, leveled off in 1962. Collectivization required large

increases in investments, both short and long term. However, the initial impact of this has passed. Also, the capitalization of state farms apparently reached a peak in 1961. Consequently, state investments in agriculture have remained virtually constant since 1961.

Further increases in farm mechanization, which would be primarily on collective farms, will be more gradual in the future than during the period 1957-61. Deliveries of farm machinery to agriculture have declined in the last 2 years. Mechanization of collective farms has also been complicated by a slight increase in rural population in the last few years instead of the decrease which would seem necessary under current policy.

By January 1963, collectivization had been completed (table 31). Only 2 percent of the arable area, predominantly in mountainous areas, is owned privately while household plots of collective farm members account for 8 percent. There was a substantial increase in the collectivization of livestock between January 1962 and 1963. Collectively owned cattle and hogs increased 90 and 50 percent respectively during this period due to shortages of feed on the household plots and government loans to collective farms for the purchase of individually owned livestock. Consequently, collectives now own 35 percent of the cattle and 28 percent of the hogs while state farms have 9 percent of the cattle and 25 percent of the hogs.

Important policy steps were taken in July and December of 1963 to increase agricultural incentives and state procurements. In July 1963 the producer price for fat cattle was increased 33 to 55 percent for cattle under 2 years and about 15 percent for cattle over 2 years. The price increases are progressively larger for heavier animals to stimulate feeding to heavier weights. In addition, a premium of about 5 percent will be paid for slaughter cattle delivered between January 1 and April 30. A similar premium will be paid on slaughter hogs delivered between March 1 and June 30.

Previously, the government purchase price for slaughter cattle was about two-thirds that of slaughter hogs. This same relationship exists in most other East European countries. With the increase in cattle prices, the purchase prices of hogs and cattle are now about the same. The change in the price relationship between cattle and hogs was no doubt influenced by the fact that the large buildup in cattle herds on collective farms was facilitated by loans from the state. It is unlikely that the resulting indebtedness could have been repaid with the relatively unfavorable returns from cattle raising. Supplementing the price incentive was an increase in feed allotments in December. These are given to collectives, collective members and private farmers as bonuses for signing delivery contracts for livestock and livestock products.

Slaughter animals are sold to the state on the basis of contracts between producers--including private--and the state procurement organization. Contracts with collective farms, based on their production plans, are approved by the regional agricultural councils and therefore are much akin to compulsory deliveries. The full effect of the price increase on output cannot yet be measured. However, the ever-growing protein deficit in the animal feed supply will hamper increased output of livestock products. Also, shortfalls in planned production of other feedstuffs are serious obstacles to the expansion

of herds. While the quality of hogs has been noticeably upgraded, cattle quality remains low.

The 1964 agricultural plan stresses increased production of grain and industrial crops, greater specialization on state farms, and a de-emphasis of state assistance to collectives. The planned increases in sown areas are: wheat, 8 percent; sugar beets, 7 percent; sunflowers, 2 percent. Increased specialization on state farms apparently will be chiefly in livestock production and the organization of specialized corn farms on reclaimed land in the Danubian Plain. In addition to the previously mentioned slowdown in the rate of mechanization, long-term low interest loans to collectives for purchasing livestock will be cut in 1964.

#### Food situation

Relative to the previous year, food supplies in 1963/64 are more plentiful. Shortages of some commodities have been noted but by Rumanian standards the food supply is adequate. The commercial supply of staple foods was limited in many rural areas during 1963 in an attempt to reduce on-farm grain stocks.

The trend of increasing per capita consumption of vegetable oils and wheat continued in 1963. However, heavy exports of sugar in recent years have precluded increases in per capita consumption of sugar. Little improvement in meat consumption has been registered in the last 3 years. On a per capita basis, urban meat consumption appears to have decreased since 1961, with the increase in commercial slaughter of approximately one-third being exported.

#### Foreign trade

Between 1958 and 1962, there was an uptrend in exports of major agricultural commodities (table 23). While grain exports fell slightly in 1962, corn exports to OECD nations increased 35,000 tons to a total of 675,000 metric tons. However, corn exports to Japan fell by about the same amount. All indications point to 1963 exports of corn to Western Europe and Japan at the 1962 level. In addition, Rumania agreed to "lend" 400,000 tons of wheat to the Soviet Union. This amounts to 10 percent of production and will constitute the largest wheat export by Rumania since the period before World War II.

Production and reserves appear to have been adequate to cover the indicated exports of wheat and corn during 1963. It is unlikely, though, that livestock numbers could have increased substantially with grain supplies thus diminished by exports.

Rumanian trade data for 1962 show sugar exports of 311,000 tons and imports of 37,000 tons. Therefore, net exports in 1962 amounted to two-thirds of the 1961 production. The availability of sugar for export in 1963, mostly from the 1962 crop, was somewhat reduced. Exports of castor oil from Rumania, the largest exporter in Europe, rose to almost 8,000 tons. Exports of edible vegetable oils likely increased in 1963 because of increased production.

Cotton imports in 1962 remained the same as in 1961, and the Soviet Union continued to supply about half (table 22). Rice imports increased during 1962 due to a deliberate cut in the rice acreage on state farms.

Table 22.--Rumania: Principal agricultural imports annually 1958-62 1/

Commodity	1958	1959	1960	1961	1962
Grain, excluding rice 2/ .....	215.2	7.0	101.6	1.2	0
Rice .....	17.0	20.9	13.5	15.8	23.1
Fruit, citrus .....	7.9	7.6	15.5	18.3	21.1
Olives .....	4.5	5.4	5.1	7.0	6.1
Sugar .....	39.9	28.7	3/	30.4	37.0
Cocoa beans .....	.5	.8	2.8	2.1	2.5
Raw hides .....	11.3	8.7	5.2	5.3	13.6
Rubber, natural .....	5.3	6.3	9.3	11.5	13.8
Cotton .....	46.1	42.2	50.7	60.8	60.8
Wool .....	2.8	2.5	2.4	2.9	.3
Edible vegetable oil .....	32.4	22.7	2.8	2.6	1.5
:					

1/ Source: Anuarul Statistic Al R.P.R. 1963 unless otherwise indicated.

2/ Based on exporting country data.

3/ Less than 100 tons.

Table 23.--Rumania: Principal agricultural exports annually 1958-62 1/

Commodity	1958	1959	1960	1961	1962
Eggs 2/ .....	49.0	67.9	121.4	107.7	131.7
Grain, total (excluding seed) ....	476.2	222.8	731.0	1,208.4	1,067.9
Fruit, fresh.....	14.5	41.6	19.6	47.0	42.8
Fruit, canned .....	77.1	55.9	65.8	85.2	75.9
Grapes .....	34.6	31.6	36.8	24.5	54.9
Vegetables, fresh .....	12.4	17.8	25.3	43.5	71.1
Vegetables, canned .....	4.2	4.1	6.3	11.7	15.5
Potatoes .....	4.3	9.2	27.4	93.0	20.9
Sugar .....	0	0	76.7	147.4	310.8
Wine .....	38.3	24.0	42.6	31.3	20.7
Wool .....	0.7	1.4	1.1	1.0	.9
Edible animal fats .....	0	4.6	12.7	9.6	8.8
Edible vegetable oil .....	0	2.4	32.0	33.7	47.6
Castor oil .....	4.5	6.8	4.8	6.1	7.9
:					

1/ Source: Anuarul Statistic Al R.P.R. 1963.

2/ In millions.

## BULGARIA

### Production

Delayed sowing of winter grains in the fall of 1962 was followed by a record cold winter and a delay in spring planting. Some improvement in the weather during the spring was followed by the third successive severe summer drought. Grain crops were particularly affected and yields of the important wheat crop were reduced below the low yields of 1962 (table 24).

Plans for 1963 had called for an increase in corn acreage with a larger proportion, nearly a third, under irrigation. Reports are lacking about the actual acreage or yield, but it appears likely that the acreage increase was modest and the average yield may have been above the 1962 yield because of an increase in irrigation.

The potato crop was below average and the State experienced difficulties with procurements because collective farms try to hold the crop for livestock feed. The sugar beet crop reportedly was not good.

Reports on certain important export crops present a spotty picture. The tobacco crop was good but not up to expectations. The harvest of grapes was good but that of apples poor. Crop appraisals are lacking for tomatoes, which are largely grown under irrigation. The crop was presumably adequate to meet export requirements.

The cumulative effect of poor feed crops has been taking its toll of livestock herds, which have been declining since January 1962. Cow numbers allegedly have been maintained and poultry numbers increased in late 1963, but milk yields declined and the planned procurement of eggs was significantly underfulfilled during 1963. Meat production, as officially reported for 1962 and estimated for 1963, showed an increase in 1962 over 1961 and possibly a slight decrease in 1963. Distress slaughtering was acknowledged at the end of 1962 and probably occurred on a smaller scale in 1963.

The outlook for 1964 depends heavily upon the weather. Winter grain sowings were reportedly completed without undue delay in the fall of 1963 on a slightly greater area than a year earlier. As much as 40 percent of the seed used for fall sowings in 1963 was of an improved quality compared with only 14 percent in 1962. More mineral fertilizer was also reportedly used in the fall of 1963. The plan for 1964 foresees a much smaller increase in the area to be brought under irrigation. This may permit more adequate supplies of water to areas currently irrigated.

### Policy

Policy decisions revealed in Government decrees in 1963 dealt with private plots and livestock of collective farmers, procedures for Government purchasing of wheat and rye, and administration of agriculture.

The Bulgarian Government in February 1963 reversed its policy of discouraging the legal minimum of private property permitted in agriculture.

Table 24.--Bulgaria: Area and production of principal crops, output of animal products, and number of livestock, average 1955-59, annual 1960-63 <sup>1/</sup>

Item	1955-59 average		1960		1961		1962		1963 <sup>2/</sup>	
	Area	Production	Area	Production	Area	Production	Area	Production	Area	Production
	1,000 hectares	1,000 metric tons	1,000 hectares	1,000 metric tons						
Field crops:										
Wheat <sup>3/</sup>	1,402	1,849	1,249	2,022	1,311	1,700	1,244	1,640	1,300	1,600
Rye <sup>3/</sup>	129	112	78	70	71	65	49	60	50	50
Barley <sup>3/</sup>	265	394	296	529	305	489	303	490	300	450
Oats <sup>3/</sup>	164	176	180	184	160	174	160	167	160	167
Corn <sup>3/</sup>	745	1,025	634	1,184	635	1,140	651	1,270	700	1,580
Potatoes	32	314	42	478	41	445	43	361	40	400
Sugar beets	59	1,061	68	1,650	69	1,463	72	1,121	70	1,050
Sunflower seed	204	231	236	344	231	301	272	357	250	320
Tobacco	100	78	87	62	96	56	117	104	117	105
Live stock:										
Products:										
Meat <sup>4/</sup>	---	425	---	417	---	488	---	525	---	500
Milk	---	842	---	1,049	---	1,119	---	1,093	---	1,100
Number: <sup>2/</sup>										
head										
	1,000		1,000		1,000		1,000		1,000	
Cattle	---	1,507	---	1,284	---	1,452	---	1,582	---	1,582
Hogs	---	1,648	---	2,266	---	2,553	---	2,331	---	2,066
Sheep	---	7,918	---	8,769	---	9,333	---	10,161	---	10,107
Horses	---	443	---	334	---	312	---	301	---	2,290

<sup>1/</sup> Source: Statisticheski Godishnik na Narodna Republika Bulgaria 1962, 1963.

<sup>2/</sup> USDA preliminary estimates, except for livestock numbers.

<sup>3/</sup> USDA estimates of production.

<sup>4/</sup> Liveweight.

<sup>5/</sup> As of January 1.

Private plots of collective farmers, permitted by law but heretofore frowned upon in practice, were to be assigned to those collective farmers not having plots, and plots under the minimum legal size were to be enlarged. Furthermore, collective farms were advised to supply collective farmers with the legal minimum of livestock, to assist them with feed supplies, and to permit grazing on communal pastures. One published report indicated that the permissive policy may have been extended even to workers on state farms.

State farm workers and part-time farmers among the urban population were included in a follow-up decree in August concerning the encouragement of private hog raising. Two government agencies were to contract with farmers for the purchase of privately owned hogs the farmers had fattened. Other government agencies were designated to supply the necessary feed and breeding services. Efforts to increase poultry raising were also made, including the supply of a given amount of feedstuffs for each egg obtained from the collective farmers. These decrees implicitly attest to the superiority of private over collectivized care of livestock. Their success will depend significantly, however, upon the availability of additional feed supplies.

A decree of late September 1963 established a new system for wheat and rye procurement. Incentives for above-plan delivery of breadgrains were provided in terms of favorable prices for the purchase of fertilizer and feed concentrates. Provisions for adjustment of grain delivery quotas in case of natural calamities were specified. The decree also repeated the prohibition of August 1962 against feeding wheat, flour, or bread to livestock.

A series of decrees emanating from the May Plenary Session of the Bulgarian Communist Party Central Committee dealt with problems of agricultural organization and planning. These adjustments followed the general direction set forth by the Soviet Union with the reorganization of the Ministry of Agricultural Production and the establishment of Administrations for Agricultural Production on the local government level in place of the former agricultural sections. The tendency of this and other decrees is towards centralization and greater control by specialists.

#### Food situation

The cumulative effect of three poor harvests in a row has been reflected in the food supply situation. Difficulties have been less pronounced in the major cities than in the smaller towns. But even in the major urban centers shortages of bread, milk, cheese, eggs, and at times other foods have been felt.

#### Foreign trade

Despite repeated official exhortations to "solve the grain problem," Bulgaria remains a grain deficit country depending on imports, notably from the Soviet Union, in years when domestic grain production is short (table 25). Following the lead of the Soviet Union, Bulgaria negotiated a 3-year trade agreement, its first, with Canada in October 1963. The agreement lists 100,000 metric tons of wheat or wheat flour equivalent annually among the imports from Canada with larger imports during the first year. Canada has

Table 25---Bulgaria: Principal agricultural imports, annually, 1955-62 1/

Commodity	1955	1956	1957	1958	1959	1960	1961	1962
: - - - - - 1,000 metric tons - - - - -								
Wheat .....	39.9	9.0	182.8	23.3	150.6	136.3	7.6	119.9
Rice .....	0	0	10.2	0	10.5	13.0	12.4	13.0
Sugar .....	0	0	0	0	28.1	34.0	99.0	124.1
Rubber, natural ...	2.1	3.3	5.1	5.8	6.0	6.1	6.1	7.8
Wool, washed .....	.7	1.7	1.9	2.7	1.7	2.1	1.3	1.1
Cotton, fiber .....	8.5	12.2	18.3	19.3	24.0	30.1	30.3	47.5
Hides, raw .....	0	2/	.8	2/	4.9	2.1	2.5	2.5
:								

1/ Source: Vunshna turgoviya na narodna republika Bulgariya: Statisticheski sbornik 1955-1961, and 1956-62.

2/ Not available.

Table 26---Bulgaria: Principal agricultural exports, annually, 1955-62 1/

Commodity	1955	1956	1957	1958	1959	1960	1961	1962
: - - - - - 1,000 metric tons - - - - -								
Pigs 2/ .....	15.3	15.8	7.8	72.8	183.3	95.8	137.2	138.6
Pork .....	16.5	16.1	10.4	18.8	16.0	14.1	13.1	10.0
Poultry meat .....	1.6	16.1	1.6	2.5	4.7	5.2	7.2	6.8
Cheese .....	0	2.2	3.5	1.7	6.9	8.8	10.7	10.5
Eggs 3/ .....	255.3	282.3	231.9	279.8	203.6	436.5	534.0	442.2
Corn .....	62.3	84.3	82.5	36.4	6.3	137.0	104.3	82.7
Fruits, fresh ....	38.0	85.8	58.2	126.9	148.0	132.2	197.7	260.6
Fruits, other ....	19.3	46.2	33.0	45.6	83.4	75.5	108.0	95.8
Vegetables, fresh :	56.9	63.4	75.8	118.4	208.7	306.8	315.3	291.9
Vegetables, other :	33.3	60.1	71.5	74.1	89.9	101.3	165.3	138.6
Wine .....	16.0	10.3	17.4	18.9	25.9	34.2	39.7	37.5
Tobacco, oriental :	27.3	42.5	42.3	39.0	59.7	69.4	61.3	52.6
Sunflower seed ....	18.5	15.2	0	6.5	47.9	81.9	43.5	92.5
:								

1/ Source: Vunshna turgoviya na narodna republika Bulgariya: Statisticheski sbornik 1955-1961, and 1956-62.

2/ Thousands.

3/ Millions.

agreed to export 150,000 metric tons before mid-1964. In the light of Bulgaria's grain production it is likely that the country will continue to look abroad for additional supplies.

Tobacco, principally Oriental, tomatoes, grapes, apples, and a wide assortment of other fruits and vegetables, as well as oilseeds, attar of roses, and certain livestock products are usual Bulgarian exports. Tobacco, tomatoes, and grapes are the most important (table 26). These agricultural exports are the mainstay of Bulgarian foreign trade without which the required industrial goods and raw materials could not be imported. For this reason the decline in exports of livestock products in 1962, the possible decline in total value of all agricultural exports in 1963, and the necessity to import grains and feed concentrates (in addition to usual imports of cotton, coffee, citrus fruits, and rubber) have multiplied the effects of agricultural underproduction.

#### YUGOSLAVIA

##### Production

Net agricultural output in 1963/64 increased slightly as substantial increases in the production of wheat, vegetables, and industrial crops more than offset declines in livestock products and fruit.

The wheat harvest was more than 20 percent above the preceding 2 years and was the second largest crop on record (table 27). Other small grain production also increased, except for rye the sown area of which declined for the sixth successive year. Although the corn crop was slightly above the preceding year and well above average, corn prices began to rise in mid-1963 and by October were 20 percent above the level of October 1962. The principal factors affecting corn prices were increased meat prices and a late summer drought which reduced the corn crop considerably below early expectations.

Tobacco production, relatively low in the 3 preceding years, was one-third above the 1962 crop. Increased output of most vegetables, sugar beets, and sunflower seeds was due to increased yields and area. Fruit production in 1963 was 10 to 15 percent less than the previous year due to the severe winter. The largest decrease was in the plum crop, the most important fruit crop in Yugoslavia, which declined from 1.13 million tons in 1961 to 874,000 in 1962 and to about 550,000 tons in 1963. The 1963 prune production probably was less than 20,000 tons.

Cattle and sheep numbers at the beginning of 1963 were substantially below the same period a year earlier due to feed shortages during the winter of 1962/63. Hog numbers decreased slightly below the 1962 level and were almost 20 percent below the record herd of 1960. As a result, the output of livestock products decreased again in 1963/64.

##### Agricultural inputs

State investments in agriculture increased in 1963 but still were only about 10 percent of total state investments. These investments are concentrated in the socialist sector, which accounts for about 15 percent of the

Table 27.--Yugoslavia: Area and production of principal crops, output of animal products, and number of livestock, average 1955-59,  
annual 1960-63 1/

Item	1955-59 average :			1960 :			1961 :			1962 :			1963 2/		
	Area	Production	Area	Production	Area	Production	Area	Production	Area	Production	Area	Production	Area	Production	Area
Field crops:															
Wheat	1,922	2,742	2,060	3,570	1,960	3,170	2,130	3,265	2,140	3,950					
Rye	254	251	213	233	180	191	177	169	157	156					
Barley	373	476	363	529	371	571	351	475	350	523					
Oats	356	350	334	373	355	432	310	305	315	345					
Corn	2,520	4,710	2,570	6,160	2,510	4,550	2,460	5,270	2,400	5,380					
Potatoes	276	2,630	288	3,270	292	2,690	302	2,630	321	3,000					
Sugar beets	75	1,688	78	2,290	81	1,730	75	1,870	96	2,450					
Sunflower seed	84	90	74	98	86	117	97	123	110	150					
Livestock:															
Products:															
Meat 3/	---	471	---	602	---	589	---	610	---	590					
Milk	---	2,040	---	2,280	---	2,246	---	2,218	---	2,200					
Eggs	---	---	---	---	Million units 1,457	---	---	Million units 1,533	---	---	Million units 1,461	---	---	Million units 1,420	---
Number: 4/					1,000 head	1,000 head	1,000 head	1,000 head	1,000 head	1,000 head	1,000 head	1,000 head	1,000 head	1,000 head	
Cattle	5,068	---	5,297	---	5,702	---	5,884	---	5,884	---	5,161	---	5,355		
Hogs	4,605	---	6,210	---	5,818	---	5,161	---	5,161	---	5,013	---	5,013		
Sheep	11,167	---	11,449	---	10,823	---	11,143	---	11,143	---	10,058	---	10,058		
Horses	1,283	---	1,272	---	1,200	---	1,226	---	1,226	---	1,175	---	1,175		

1/ Official Yugoslav data unless otherwise indicated: Statisticki Godisnjak S.P.R.J., 1963.

2/ USDA preliminary estimates.

3/ Carcass weight.

4/ January 15 of year shown.

arable area. They are about equal to investments by private farmers who possess 85 percent of the arable land. Investments by private farmers tend to be short-run--seed, fertilizer, etc.--while state investments are concentrated in machinery, buildings, and land.

Increased mechanization of agriculture has proceeded more slowly in Yugoslavia during the last few years than in most other East European countries. This is due in large part to fragmentation and surplus labor in the private sector which prevent extensive use of machinery. In general the socialist sector is well supplied with tractors, having about 1 tractor per 25 hectares. However, they have not been used efficiently. There are approximately 40 different types of tractors, and spare parts are not available for all these types. Implements are often lacking or not adaptable to the tractors.

Increased cooperation between socialist farms and private farmers has brought about an increase in tractor plowing, planting, and fertilizing in the private sector, but manual labor is still the predominant input on the small plots. In most cases more extensive mechanization--especially in harvesting--would probably prove too expensive to private producers. In addition, mechanization of private agriculture is complicated by the fact that the average tractor size in Yugoslavia is by far the largest in East Europe (table 30).

Fertilizers available to agriculture increased again in 1963 and amounted to an average of about 50 kilograms of plant nutrients per arable hectare. Fertilizer production did not increase as planned in 1963 but imports were more than 50 percent larger than in 1962. The use of improved varieties of foreign wheat was expanded to include about two-thirds of the sown area in 1963 compared with 15 percent in 1959. In contrast, hybrid corn was planted on only about one-third of the 1963 corn area.

### Policy

A primary goal of Yugoslav agrarian policy is increasing agricultural production through the modernization of production practices on large socialist farms. A basic factor underlying this policy is the necessity for expanding the commercial output of agricultural products. Yugoslav leaders have become increasingly convinced that in the long run only large-scale mechanized farming can supply the increasing market demands of this unique economy. To this end, the goal of 30 percent of the arable area in the socialist sector by 1970 has been announced. 10/

Estimates of land in the Socialist sector at the end of 1963 ranged from 15 to 18 percent of the arable area which is a slight increase over 1962. The socialist sector has a considerably larger share of productive land, as almost half of the holdings are in the Vojvodina, the most fertile region of the

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10/ For a more detailed description of the Yugoslav method of socialization through the purchase of land, etc., see Agricultural Situation in 1961-62 Soviet Union and Other East European Countries, ERS-Foreign-29, USDA, September 1962.

country. The purchase of private land by socialist farms again exceeded 100,000 hectares in 1963.

Cooperation between private peasants and agricultural cooperatives showed a marked increase in 1963. This was especially true in wheat production where the area planted cooperatively was double that of 1962. In the Vojvodina, 70 percent of the private land in wheat was farmed under cooperative arrangements in 1963.

The policy of mechanization and state purchase of land to increase the area in large farms has accelerated the migration of unskilled rural people to urban areas. As a result, more than half of the unemployed in Yugoslavia are from rural areas. As this problem continues to grow, it may affect the policy of enlarging the state sector of agriculture.

Probably the most noteworthy trend in recent years has been the increase in government purchase prices of agricultural products. The substantial increases in 1962 were to remain effective through 1964. However, the Government was forced to increase the prices of corn, livestock, and milk again in 1963 in response to lagging production and heavy demand pressures.

The increase in the corn price in mid-1963 resulted in a wheat-corn price relationship about the same as that prior to 1962, when it was altered in favor of wheat. Because corn and wheat compete for inputs, there is growing concern that the increase in the price of corn will adversely affect wheat production in 1964.

#### Food situation

The supply of staples--grains, potatoes, onions, and carrots--was better in 1963 than during the preceding year. There were, however, shortages of fruits, beans, and livestock products. The most serious shortage was in meats due to reduced production and continued exports. While prices paid by urban consumers in the winter of 1963/64 for vegetables were about 20 percent less than during the previous year, the prices of flour, meat, eggs, and milk increased 15 to 30 percent.

#### Foreign trade

According to preliminary data Yugoslav agricultural exports increased nearly one-third in 1963 after virtually no change since 1960. During the first 11 months of 1963 agricultural imports increased about 50 percent over the previous year and were about equal to exports. The increase in imports was almost entirely a result of the \$108 million P.L. 480 agreement signed with the United States in November 1962.

In 1963 most of the principal agricultural import commodities were imported in larger quantities--exceptions being hides and skins, sugar, and hogs for slaughter. The largest increases in imports were in grains--which reached an alltime high--dairy and poultry products, textile fibers and tobacco which was double the 1962 import level.

Table 28.--Yugoslavia: Principal agricultural imports, annually, 1955-62 1/

Commodity	1955	1956	1957	1958	1959	1960	1961	1962
Pigs for slaughter	0	.2	1.5	8.3	5.1	12.0	16.2	22.5
Milk, powdered	3.0	10.1	12.0	37.8	27.4	16.9	20.9	18.1
Cheese	.6	3.7	13.0	10.5	.1	0	2/	0
Eggs	0	0	.1	.3	2/	2.0	2.4	3.6
Wheat and wheat flour	975.4	1,326.5	1,163.5	821.4	1,102.5	158.1	819.3	799.6
Rice, paddy	20.0	34.9	26.3	28.6	35.8	43.3	13.6	4.1
Coarse grain	33.4	30.9	17.4	1.0	6.1	3.8	1.1	74.2
Fruit, citrus	9.6	12.1	14.0	19.0	26.2	40.1	45.8	39.8
Potatoes	2/	.6	.4	7.3	42.0	10.2	1.0	22.8
Sugar, refined	45.8	101.3	74.6	124.3	61.5	122.7	107.3	131.4
Coffee beans	2.9	4.5	2.8	3.9	5.9	9.2	9.6	10.3
Cocoa beans	2.6	2.1	2.4	2.5	2.8	3.5	6.6	3.6
Hides and skins	12.5	15.5	20.5	17.4	20.0	26.3	25.0	27.3
Oilseeds	12.1	28.3	38.1	1.0	26.6	12.0	9.4	12.3
Rubber, crude	4.0	6.1	8.2	7.8	10.7	12.1	14.4	13.9
Cotton	44.7	34.6	39.4	38.3	48.8	42.9	56.0	56.0
Jute	3.6	3.0	5.3	5.7	7.8	5.9	6.9	11.1
Wool, actual weight	.2	4.1	4.6	6.8	8.6	6.4	12.1	6.4
Vegetable oils, edible	18.7	9.2	29.4	35.2	49.5	32.1	38.4	41.4
Lard	35.7	42.0	25.8	21.6	7.0	0	1.7	2.2
Tallow	10.1	11.5	11.4	15.0	6.6	6.2	9.9	15.2

1/ Source: Statistika Spoljne Trgovine S.F.R. Jugoslavije, annual issues 1955 through 1962.

2/ Less than 50 tons.

Table 29.--Yugoslavia: Principal agricultural exports, annually, 1955-62 1/

Commodity	1955	1956	1957	1958	1959	1960	1961	1962
Cattle for slaughter	23.3	35.2	44.0	28.2	35.5	36.5	55.6	37.0
Sheep for slaughter	4.0	4.9	13.0	7.0	6.3	9.3	15.8	8.7
Hogs for slaughter	4.1	9.1	2.1	3.2	5.0	4.5	1.1	1.1
Horses for slaughter	2.5	9.7	0	11.9	11.8	11.3	27.4	29.1
Red meat, fresh	14.9	19.2	19.8	18.8	24.8	36.7	51.2	88.4
Red meat, canned	2.0	6.5	11.2	12.5	18.1	21.1	23.4	21.0
Cheese	.8	1.4	2.5	1.8	.9	.6	.6	5.4
Eggs, fresh equivalent	13.6	17.9	11.0	14.5	8.3	18.4	13.2	8.1
Corn	2.0	50.3	49.3	571.8	316.9	513.5	376.3	27.8
Other coarse grains	1.2	2.9	6.5	175.9	31.9	5.5	5.1	15.1
Fruit, fresh	27.4	19.1	65.8	26.1	46.1	22.3	15.8	61.7
Prunes	29.4	11.4	7.0	21.0	15.5	19.6	15.2	14.6
Fruit pulp	15.0	29.5	27.4	21.8	16.9	15.4	13.4	16.2
Potatoes	1.0	19.0	1.0	31.0	.3	1.0	14.9	.2
Beans, dry	4.3	19.2	5.3	2.7	.1	3.4	10.3	.8
Hops	2.3	2.3	2.4	2.5	3.3	4.7	5.5	3.9
Sugar, refined	0	0	18.2	11.0	45.0	85.5	24.6	21.2
Wine 2/	254.6	470.6	699.0	853.3	432.6	543.1	395.3	513.5
Tobacco	14.6	20.0	16.1	23.2	16.2	18.5	15.9	15.3
Oilseeds	1.0	.3	1.8	1.9	6.1	12.4	4.5	1.7
Hemp, all	11.1	12.3	7.2	10.6	14.1	15.5	13.4	10.3

1/ Source: Statistika Spoljne Trgovine S.F.R. Jugoslavije, annual issues 1955 through 1962.  
 2/ 1,000 hectoliters (264.18 U.S. gallons)

Sales of principal agricultural exports increased in 1963, except dairy and poultry products. Exports of meat, slaughter animals, fruits, vegetables, and tobacco were more than 20 percent greater than in 1962. Net exports of tobacco on a value basis were apparently at a 10-year low due to unprecedeted imports, even though the average unit value of exports was about 4 times greater than that of imports. These imports from India and neighboring Balkan countries were almost nil in 1961, but reached a value of \$1.4 million in 1962 and \$2.7 million in 1963. Imports for domestic consumption were necessary to continue an increasing rate of exports to hard currency countries.

In January 1964, all import duties on coffee, tea, bananas, and cocoa were eliminated. Yugoslavia officials expect this action to result in increased imports of these products--principally coffee--of about \$5 million in 1964.

Table 30.--Eastern Europe: Agriculture in the economy and major agricultural inputs, by country, 1962

	Unit	USSR	Poland	East Germany	Czechoslovakia	Hungary	Rumania	Bulgaria	Yugoslavia
<b>Agriculture in the economy:</b>									
Contribution to GNP	Percent	24	20	9	13	19	33	33	25
Share of exports	Do.	21	22	4/	6	25	57	57	30
Share of imports	Do.	25	22	27	18	20	6	6	26
Rural population	Do.	49	51	28	18	36	57	57	50
<b>Inputs in agriculture:</b>									
<b>Land:</b>									
Agricultural land	Mil. ha.	522	20	6.4	7.3	7.0	14.7	5.7	14.9
Arable land	Mil. ha.	235	16	4.8	5.1	5.1	9.9	4.1	7.7
Sown area	Mil. ha.	216	15	4.7	5.1	5.0	9.7	4.0	7.2
<b>Labor:</b>									
Agricultural labor force	Million	47	1/6.5	1.4	1.4	1.5	4/	1.5	3.7
Share of total labor force	Percent	46	1/1.7	18	22	35	4/	4.3	4.4
Sown area per worker	Hectare	4.6	1/2.3	3.4	3.6	3.1	4/	2.7	1.9
<b>Tractors:</b>									
Tractors, physical units	Thousands	1,280	83	100	4/	49	58	4/	40
Tractors, 15 hp. units	Do.	2,293	100	132	116	61	87	42	105
Average hp. per tractor	Do.	94	27	18	20	4/	19	22	39
Sown area per 15 hp. unit	Hectare		152	36	82	113	7	93	69
<b>Fertilizer:</b>									
Utilization of plant nutrients (active substance)	Kg./ha.	13	56	196	77	54	15	30	42
Arable land	Kg./ha.	14	59	198	77	55	15	32	65

1/ 1961.

2/ 1960 and 1961.

3/ Insignificant.

4/ Not available.

Table 31. -- Eastern Europe: Socialization of agriculture, by country, 1962 1/

(Percentage of total in agriculture)

	USSR : Poland : Germany : Slovakia <sup>2/</sup> : Hungary <sup>3/</sup> : Rumania <sup>3/</sup> : Bulgaria <sup>2/</sup> : Yugoslavia <sup>2/</sup>	East : Czechoslovakia <sup>2/</sup>	Czechoslovakia <sup>2/</sup>	Percent
Land:				- - - - -
Agricultural	99	14	93	88
Arable	97	11	97	90
Labor force	80	4/7	98	85
Tractors, physical units	100	85	100	106
Livestock:				- - - - -
Cattle	72	14	61	81
of which cows	58	10	54	71
Hogs	77	11	68	74
Sheep	79	13	70	86
Agricultural output:				- - - - -
Total	67	11	5/	74
Grain	98	12	95	85
Potatoes	30	8	91	65
Sugar beets	100	13	100	5/
Meat	56	11	5/	75
Milk	55	2/11	5/	5/
Eggs	24	2/2	5/	10

1/ "Socialization of agriculture" means the extent to which "socialist" types of farm units, including collective farms, state farms, etc., have replaced individually owned farms. Private plots and live-stock of workers in the "socialized" sector are not included. 2/ 1961. 3/ 1963. 4/ 1960. 5/ Not available. 6/ 15 hp. units.

Table 32---Conversion equivalents

Pounds per bushel

Wheat and potatoes .....	60
Rye and corn .....	56
Barley .....	48
Oats .....	32
One kilogram	equals 2.2046 pounds
One centner or metric quintal "	220.46 pounds
One metric tons "	10. centners or 2204.6 pounds
One pood "	36.1 pounds or 16.38 kilograms
One hectare "	2.471 acres
One acre "	0.4 hectare
One kilometer "	0.6 mile

Centners (metric quintals) to bushels

<u>One centner</u>	<u>Bushels</u>
Wheat and potatoes .....	3.6743 (3.7)
Rye and corn .....	3.9368 (3.9)
Barley .....	4.5929 (4.6)
Oats .....	6.8894 (6.9)

Bushels to centners (metric quintals)

<u>One bushel</u>	<u>Centners</u>
Wheat and potatoes .....	0.2722 (0.27)
Rye and corn .....	0.2540 (0.25)
Barley .....	0.2177 (0.22)
Oats .....	0.1452 (0.15)

To convert centners per hectare to bushels per acre,  
multiply by:

Wheat and potatoes .....	1.487 (1.5)
Rye and corn .....	1.593 (1.6)
Barley .....	1.8587 (1.9)
Oats .....	2.788 (2.8)

To convert bushels per acre to centners (metric quintals),  
per hectare multiply by:

Wheat and potatoes .....	0.6725 (0.67)
Rye and corn .....	0.6277 (0.63)
Barley .....	0.5380 (0.54)
Oats .....	0.3587 (0.36)

One metric ton of ginned cotton = 4.593 bales of 480 pounds.



